

NASA CONTRACTOR
REPORT

NASA CR-129010

**CASE FILE
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S-II STAGE 1/25 SCALE MODEL BASE REGION
THERMAL ENVIRONMENT TEST

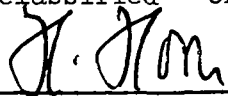
VOL. II: Test Data Tabulation, Statistical Analysis
Results, and Heating Rate Contours

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May 1, 1973

Prepared for

NASA-GEORGE C. MARSHALL SPACE FLIGHT CENTER
Marshall Space Flight Center, Alabama 35812

1. REPORT NO. NASA CR-129010		2. GOVERNMENT ACCESSION NO.		3. RECIPIENT'S CATALOG NO.	
4. TITLE AND SUBTITLE S-II Stage 1/25 Scale Model Base Region Thermal Environment Test Volume II: Test Data Tabulation, Statistical Analysis Results, and Heating Rate Contours				5. REPORT DATE May 1, 1973	
				6. PERFORMING ORGANIZATION CODE	
7. AUTHOR(S) J. A. Sadunas; E. P. French; H. Sexton				8. PERFORMING ORGANIZATION REPORT # SD73-SA-0061 Vol. II	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Rockwell International Corporation Space Division Downey, California				10. WORK UNIT NO.	
				11. CONTRACT OR GRANT NO. NAS 7-200	
12. SPONSORING AGENCY NAME AND ADDRESS National Aeronautics and Space Administration Washington, D. C. 20546				13. TYPE OF REPORT & PERIOD COVERED NASA Contractor Report	
				14. SPONSORING AGENCY CODE	
15. SUPPLEMENTARY NOTES Volume I is NASA CR-129009					
16. ABSTRACT A 1/25 scale model S-II stage base region thermal environment test conducted at George C. Marshall Space Flight Center is presented. Analytical results are included which reflect the effect of engine operating conditions, model scale, turbo-pump exhaust gas injection on base region thermal environment. Comparisons are made between full scale flight data, model test data, and analytical results. The report is prepared in two volumes. Volume I presents the description of the test equipment, test procedures, discussion of the test results, analytical predictions and comparisons with flight data. Volume II contains the tabulation of the test data.					
17. KEY WORDS Base heating, reverse flow plume interaction, short duration model testing			18. DISTRIBUTION STATEMENT Unclassified - Unlimited  E. D. Geissler, Director Aero-Astroynamics Laboratory		
19. SECURITY CLASSIF. (of this report) Unclassified		20. SECURITY CLASSIF. (of this page) Unclassified		21. NO. OF PAGES 325	
				22. PRICE NTIS	



FOREWORD

This report is submitted by the Rockwell International Corporation, Space Division to the National Aeronautics and Space Administration's George C. Marshall Space Flight Center at Huntsville, Alabama, in accordance with Task Authorization TA-68 issued pursuant to NASA Contract NAS7-200.

This report presents the results of the 1/25 scale model S-II Stage base region thermal environment test conducted at MSFC under the direction of the Aero-Astroynamics Laboratory with test engineering support provided by Space Division.

Analytical results are presented which reflect the effect of engine operating conditions, model scale, turbo-pump exhaust gas injection in the engine nozzle, and co-planar engine gimbaling on the S-II base region thermal environment. Comparisons are made between full scale flight data, model test data, and the analytical results.

This report is prepared in two volumes. Volume I presents the description of the test equipment, test procedures, discussion of the test results, analytical predictions and comparisons with flight data. Volume II contains the tabulation of the test data.

The task activities were conducted with Mr. J. A. Sadunas, Task Manager, Dr. E. P. French, and Mr. H. Sexton, the responsible engineers from the Saturn Launch Vehicles Aerothermodynamics group, and Mr. D. C. Seymour as the technical coordinator for the Marshall Space Flight Center.

The authors wish to acknowledge the cooperation and valuable suggestions contributed by Messrs. D. C. Seymour and R. F. Elkin of S&E-Aero-Astroynamics Laboratory and John Reardon of REMTECH, Inc.

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1.0 INTRODUCTION

The documentation of the S-II Stage 1/25 Scale model base region thermal environment test program was prepared in two volumes. Volume I contains the description of the test equipment, test procedures, discussion of the test results, analytical predictions and comparisons with flight data. Volume II contains the test data tabulation, statistical analysis results and heat shield constant heating rate contours. This volume supplements the results of Volume I, and it is intended that it be used in conjunction with Volume I.

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2.0 MODEL TEST DATA STATISTICAL ANALYSIS RESULTS

The results of statistical analysis of the test data are presented in this section in tabular form. For each set of test runs, the number of samples, or test runs, the average test value, and the standard deviations were computed for each gage and printed out as shown using the following relationships.

$$\bar{x} = \frac{\sum x}{N} \quad \text{(Sample Mean)}$$

$$\sigma_x = \left[\left(\overline{x^2} \right) - (\bar{x})^2 \right]^{1/2} \quad \text{(Standard Deviation of Sample)}$$

$${}^1\sigma_x = C \sigma_x \quad \text{(Standard Deviation of Universe)}$$

$${}^1\sigma_{\bar{x}} = \frac{{}^1\sigma_x}{N^{1/2}} \quad \text{(Standard Deviation of Mean)}$$

where

$$C = \frac{\left(\frac{2}{N} \right)^{1/2} \Gamma\left(\frac{N}{2} \right)}{\Gamma\left(\frac{N-1}{2} \right)} \rightarrow \left[1 + \frac{1}{4(N-1)} \right] \left(\frac{N}{N-1} \right)^{1/2}$$

A summary of all the test cases run during this test program, and presented in this section, is given in Table 5-1, Volume I.

CASE ----- RUN SERIES C01, LOG C01

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: PRELIMINARY CHECKOUT FOR COMPARISON WITH PREVIOUS CAL RESULTS

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P007	6	0.025	0.005	0.006	0.033
P011	5	0.025	0.004	0.005	0.031
P015	2	0.001	0.000	0.000	0.002
P017	2	0.004	0.000	0.001	0.006
Q001	6	1.597	0.323	0.372	2.052
Q002	5	2.444	0.725	0.861	3.599
Q003	6	4.167	0.674	0.775	5.116
Q004	2	5.000	0.030	0.053	5.113
Q008	2	3.330	0.490	0.866	5.168
Q020	2	0.006	0.001	0.003	0.012
Q021	3	0.007	0.002	0.003	0.013
Q022	4	0.017	0.001	0.001	0.018
Q023	7	0.053	0.011	0.012	0.067
Q024	6	0.091	0.006	0.007	0.100
Q025	8	0.207	0.021	0.023	0.232

GIMBAL PATTERN ---	NO DEFLECTION	MIXTURE RATIO	5.00
NOMINAL PC -----	632.0 PSIA	INTERSTAGE	OFF

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

(Q) IN BTU/SQ-FY-SEC, (P) IN PSIA

P007	2	0.025	0.007	0.012	0.008	0.050
P011	4	0.021	0.001	0.002	0.001	0.024
P015	3	0.002	0.001	0.001	0.000	0.003
P017	3	0.002	0.000	0.001	0.000	0.003
Q008	1	2.699	0.0	0.0	0.0	2.699
Q024	4	0.099	0.016	0.020	0.010	0.129
Q025	4	0.210	0.061	0.076	0.038	0.325

CASE ----- RUN SERIES C03, LOG C03.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 4.50
NOMINAL PC ----- 546.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE MODEL OPERATION WITH VARIABLE O/F RATIO

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
(Q) IN BTU/SQ-FT-SEC (P) IN PSIA					
P007	5	0.012	0.002	0.001	0.015
P011	4	0.002	0.000	0.000	0.003
P015	5	0.002	0.000	0.000	0.002
P017	2	0.001	0.000	0.000	0.001
Q007	2	1.665	0.071	0.126	1.932
Q008	1	1.467	0.0	0.0	1.467
Q024	7	0.066	0.019	0.022	0.091
Q025	8	0.155	0.072	0.080	0.240

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CASE ----- RUN SERIES C03, LOG C03.3

GIMBAL PATTERN ---- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE MODEL OPERATION WITH VARIABLE O/F RATIO

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
		(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA		
P007	4	0.029	0.004	0.005
P011	6	0.034	0.007	0.008
P015	7	0.002	0.000	0.001
P017	5	0.002	0.000	0.000
Q007	5	3.031	0.316	0.375
Q008	2	1.894	0.482	0.853
Q025	8	0.209	0.037	0.041
				0.002
				0.003
				0.000
				0.000
				0.168
				0.603
				0.015
				0.036
				0.044
				0.003
				0.002
				3.534
				3.704
				0.253

CASE ----- RUN SERIES C04, LOG C04.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE FLOW SYMMETRY AT NOZZLE EXITS

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
(Q) IN BTU/SQ-FT-SEC, (P) IN (PSIA)					
P020	6	3.430	0.145	0.167	0.068
P021	6	3.380	0.198	0.227	0.093
P022	6	3.310	0.245	0.282	0.115
P023	6	3.353	0.285	0.328	0.134
P024	6	3.303	0.385	0.443	0.181
P025	6	3.282	0.439	0.505	0.206
P026	6	3.362	0.186	0.214	0.087
P027	6	3.551	0.092	0.106	0.043
P028	6	3.598	0.400	0.460	0.188
P029	6	3.523	0.236	0.271	0.111
Q060	5	229.532	8.905	10.685	4.778
Q061	5	175.839	29.030	34.486	15.422
Q062	3	146.644	50.643	69.778	40.286
Q063	4	196.487	39.978	50.010	25.005
Q064	4	180.436	9.498	11.881	5.941
Q065	2	182.266	10.651	18.828	13.313
Q066	2	336.519	10.562	18.672	13.203
Q067	3	280.615	66.516	91.648	52.913
Q068	6	186.024	16.102	18.521	7.561
Q069	5	232.153	47.811	56.795	25.400

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CASE ----- RUN SERIES C04, LOG C04.3

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE FLOW SYMMETRY AND EFFECT OF NOZZLE ENTRANCE AREA.
 SPECIAL LARGE DIAMETER PASSAGE TO NOZZLE THROAT ON NOZZLE 1 (RUNS 577 AND 578), NOZZLE 5 (RUNS 579 AND 580), NOZZLE 3 (RUNS 581 AND 582)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	(Q) IN RTU/SQ-FT-SEC		STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV			
P020	6	3.554	0.067	0.078	0.032	0.032	3.649
P021	6	3.563	0.113	0.131	0.053	0.053	3.723
P022	6	3.523	0.241	0.277	0.113	0.113	3.863
P023	6	3.488	0.074	0.085	0.035	0.035	3.592
P024	6	3.351	0.130	0.149	0.061	0.061	3.534
P025	6	3.357	0.089	0.102	0.042	0.042	3.482
P026	6	3.404	0.081	0.093	0.038	0.038	3.517
P027	6	3.728	0.047	0.054	0.022	0.022	3.795
P028	6	3.587	0.149	0.172	0.070	0.070	3.797
P029	6	3.886	0.177	0.203	0.083	0.083	4.135
Q060	6	208.777	8.842	10.170	4.152	4.152	221.233
Q061	6	198.533	11.033	12.690	5.181	5.181	214.075
Q064	6	211.233	25.297	29.097	11.879	11.879	246.870
Q065	6	169.112	12.629	14.526	5.930	5.930	186.903
Q068	4	220.583	3.141	3.929	1.965	1.965	226.477
Q069	5	228.857	24.146	28.684	12.828	12.828	267.340

CASE ----- RUN SERIES C05, LOG C05

GIMRAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: ATTEMPT TO EVALUATE CAUSE OF THRUST STRUCTURE HEATING. DATA IS QUESTIONABLE DUE TO POSSIBLE NOZZLE ADAPTER LEAKS FORWARD OF THE HEAT SHIELD. 19 INCH DIAMETER DISK INSTALLED AT STATION -5 (0.44 INCH FORWARD OF NOZZLE EXIT PLANE).

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
------------------	-------------------	----------------	--------------------------------------	---------------------------------

(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

P016	3	0.001	0.000	0.000	0.002
P017	2	0.001	0.000	0.000	0.001
P018	1	0.001	0.0	0.0	0.001
Q001	3	1.698	0.788	1.086	3.578
Q002	4	2.413	0.841	1.052	3.991
Q003	4	5.542	0.795	0.995	7.034
Q004	4	4.755	0.910	1.138	6.462
Q008	3	4.347	1.236	1.703	7.296
Q009	3	4.479	0.827	1.139	6.452
Q011	4	2.725	1.462	1.829	5.468
Q013	4	2.946	1.364	1.706	5.504
Q015	4	3.048	0.469	0.586	3.928
Q016	4	2.442	0.692	0.865	3.740
Q019	4	2.104	0.482	0.603	3.009
Q022	4	0.073	0.022	0.028	0.115
Q023	4	0.013	0.007	0.009	0.027
Q024	4	0.013	0.007	0.009	0.026
Q025	2	0.032	0.001	0.002	0.036
Q031	1	0.017	0.0	0.0	0.017
Q035	4	0.004	0.001	0.002	0.006
Q036	2	0.001	0.001	0.001	0.003

CASE ----- RUN SERIES 1, LOG 1.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00

NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: BASE LINE DATA FOR NOMINAL CONDITION

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3 (ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, P IN PSIA					
P016	5	0.001	0.000	0.000	0.002
P017	5	0.001	0.000	0.000	0.002
P018	6	0.001	0.001	0.001	0.002
Q001	6	1.678	1.051	1.209	3.158
Q002	5	2.079	0.716	0.851	3.221
Q003	2	4.418	0.443	0.783	6.079
Q004	3	4.909	0.728	1.003	6.646
Q008	6	3.255	0.981	1.129	4.637
Q009	6	4.047	1.073	1.235	5.559
Q011	7	2.483	0.295	0.332	2.859
Q013	6	2.402	0.441	0.508	3.024
Q015	7	3.252	0.755	0.849	4.215
Q016	7	3.060	0.440	0.495	3.621
Q019	7	2.497	0.288	0.324	2.864
Q022	5	0.016	0.002	0.003	0.020
Q023	7	0.048	0.016	0.019	0.069
Q024	7	0.053	0.016	0.018	0.074
Q025	7	0.126	0.041	0.046	0.178
Q031	7	0.033	0.006	0.007	0.040
Q035	7	0.049	0.010	0.011	0.062
Q036	7	0.055	0.019	0.022	0.080

CASE ----- RUN SERIES 1, LOG 1.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TEST FOR ALTITUDE EFFECTS ON BASE ENVIRONMENT. MAXIMUM SIMULATED ALT.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P016	4	0.002	0.000	0.000	0.002
P017	4	0.002	0.001	0.001	0.003
P018	3	0.001	0.000	0.000	0.001
Q001	4	1.234	0.531	0.664	2.230
Q002	5	2.186	1.061	1.260	3.876
Q003	4	3.801	1.262	1.579	6.169
Q004	3	5.296	0.507	0.698	6.506
Q008	4	2.729	1.567	1.961	5.670
Q009	3	3.594	2.104	2.899	8.615
Q011	5	2.504	0.299	0.355	2.980
Q013	5	2.342	0.367	0.436	2.927
Q015	5	2.874	0.484	0.575	3.645
Q016	5	2.834	0.552	0.656	3.713
Q019	5	2.190	0.362	0.430	2.766
Q022	5	0.024	0.005	0.006	0.032
Q023	5	0.037	0.014	0.017	0.060
Q024	5	0.045	0.018	0.021	0.073
Q025	4	0.118	0.067	0.084	0.244
Q031	4	0.030	0.006	0.007	0.040
Q035	5	0.043	0.010	0.012	0.059
Q036	5	0.043	0.016	0.019	0.069

CASE ----- RUN SERIES 1, LOG 1.3 AND 1.4

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: FOR COMPARISON OF 210 AND 256 INCH HEAT SHIELDS ON THRUST STRUCTURE HTG.
 TC HEATING RATES AND PRESSURES QUESTIONABLE DUE TO HOT GAS LEAKAGE FROM NOZZLE ADAPTERS. UNEXPL-
 AINED INCREASES OCCURRED ON SOME TC GAGES (USUALLY Q22 AND Q35). 210 INCH HEAT SHIELD & HIGH ALT

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC (P) IN PSIA					
P016	5	0.001	0.000	0.000	0.002
P017	5	0.001	0.000	0.001	0.002
P018	4	0.001	0.000	0.000	0.001
Q001	3	2.938	0.615	0.847	4.405
Q002	6	2.996	0.561	0.645	3.786
Q003	5	5.212	1.038	1.233	6.865
Q004	6	5.853	0.372	0.427	6.377
Q008	6	4.212	0.838	0.964	5.393
Q009	5	4.308	0.519	0.617	5.136
Q011	6	2.672	0.253	0.292	3.029
Q013	6	2.653	0.306	0.352	3.084
Q015	6	2.872	0.291	0.334	3.281
Q016	6	2.641	0.258	0.296	3.004
Q019	6	1.878	0.323	0.372	2.333
Q022	5	0.054	0.005	0.006	0.063
Q023	6	0.037	0.005	0.006	0.045
Q024	6	0.045	0.009	0.010	0.057
Q025	6	0.094	0.008	0.009	0.105
Q031	6	0.027	0.004	0.005	0.033
Q035	5	0.053	0.006	0.008	0.063
Q036	5	0.053	0.011	0.013	0.070

CASE ----- RUN SERIES 1, LOG 1.5

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE EFFECT OF HIGHER CHAMBER PRESSURE WITH O/F = 5.
POSSIBLE NOZZLE ADAPTER LEAKAGE FORWARD OF HEAT SHIELD DURING RUN 190. THRUST STRUCTURE DATA
QUESTIONABLE.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P016	10	0.001	0.000	0.000	0.002
P017	10	0.001	0.000	0.000	0.001
P018	10	0.001	0.000	0.000	0.001
Q001	10	0.938	0.114	0.124	1.056
Q002	10	1.590	0.498	0.539	2.101
Q003	6	3.968	0.759	0.873	5.037
Q004	6	4.456	1.010	1.162	5.879
Q008	10	1.795	0.399	0.432	2.205
Q009	10	2.409	0.508	0.550	2.931
Q011	10	2.603	0.236	0.256	2.845
Q013	10	2.256	0.528	0.572	2.799
Q014	9	2.615	0.383	0.419	3.035
Q016	10	2.303	0.207	0.224	2.515
Q019	10	1.794	0.252	0.273	2.053
Q022	8	0.010	0.005	0.005	0.015
Q023	10	0.046	0.015	0.016	0.061
Q024	10	0.062	0.018	0.019	0.081
Q025	10	0.074	0.041	0.045	0.117
Q030	7	0.001	0.003	0.003	0.005
Q033	7	0.008	0.006	0.007	0.015
Q034	10	0.039	0.019	0.021	0.059
Q035	10	0.057	0.013	0.014	0.070
Q036	10	0.056	0.012	0.013	0.068

CASE ----- RUN SERIES 2, LOG 2.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ----- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE EFFECT OF HIGHER MIXTURE RATIO AND CHAMBER PRESSURE. LEAK
 FORWARD OF THE HEAT SHIELD OR ZERO SHIFT FROM SPARK NOISE. IC DATA QUESTIONABLE ON RUNS 124-136.
 Q7H HEATED TO MEASURE TR. 0.6 DEG GIMBAL BLOCK ON NOZZLE 3 RUNS 282-285.050 @ P17.Q51 @ P15.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER NO. OF SAMPLE STANDARD DEVIATION SAMPLE MEAN
 ID SAMPLES MEAN SMPL UNIV MEAN + 3(ST DEV MEAN)

(Q) IN BTU/SQ-FT-SEC. (P) IN PSIA

P001	6	0.024	0.001	0.001	0.000	0.025
P002	6	0.031	0.003	0.004	0.002	0.036
P003	6	0.033	0.002	0.002	0.001	0.035
P005	6	0.032	0.002	0.002	0.001	0.034
P006	6	0.032	0.001	0.002	0.001	0.034
P007	6	0.031	0.002	0.002	0.001	0.034
P008	5	0.024	0.004	0.005	0.002	0.030
P011	5	0.033	0.002	0.003	0.001	0.036
P016	13	0.002	0.001	0.001	0.000	0.003
P017	8	0.002	0.000	0.000	0.000	0.002
P018	13	0.002	0.001	0.001	0.000	0.002
Q001	16	1.600	0.792	0.832	0.208	2.224
Q002	16	2.816	0.833	0.875	0.219	3.472
Q003	12	4.833	1.462	1.562	0.451	6.186
Q004	15	5.645	1.074	1.131	0.292	6.521
Q007	6	1.721	0.235	0.270	0.110	2.052
Q008	14	4.195	1.278	1.351	0.361	5.278
Q009	16	4.826	1.356	1.423	0.356	5.894
Q010	4	3.529	0.285	0.356	0.178	4.063
Q011	15	2.942	0.488	0.514	0.133	3.340
Q013	13	3.123	0.635	0.674	0.187	3.684
Q015	13	3.300	0.660	0.701	0.194	3.884
Q017	6	0.791	0.092	0.106	0.043	0.921
Q019	14	2.542	0.628	0.664	0.177	3.075

CASE ----- RUN SERIES 2, LOG 2.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE EFFECT OF HIGHER MIXTURE RATIO AND CHAMBER PRESSURE. LEAK
 FORWARD OF THE HEAT SHIELD OR ZERO SHIFT FROM SPARK NOISE. TC DATA QUESTIONABLE ON RUNS 124-136.
 Q7H HEATED TO MEASURE TR. 0.6 DEG GIMBAL BLOCK ON NOZZLE 3 RUNS 282-285.Q50 @ P17,Q51 @ P15.

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SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
Q022	14	0.051	0.036	0.038	0.010
Q023	14	0.046	0.018	0.019	0.005
Q024	14	0.057	0.025	0.027	0.007
Q025	14	0.110	0.050	0.053	0.014
Q030	6	0.011	0.002	0.002	0.001
Q031	14	0.025	0.005	0.006	0.001
Q032	6	0.054	0.010	0.012	0.005
Q033	5	0.012	0.006	0.007	0.003
Q034	6	0.035	0.009	0.010	0.004
Q035	14	0.052	0.020	0.021	0.006
Q036	14	0.057	0.029	0.030	0.008
Q037	4	0.115	0.008	0.009	0.005
Q040	4	0.038	0.004	0.005	0.003
Q041	5	0.030	0.010	0.012	0.005
Q050	4	0.114	0.040	0.050	0.025
Q051	4	0.003	0.003	0.004	0.002
Q052	6	1.983	0.140	0.161	0.066
Q07H	2	6.372	0.308	0.545	0.385
T07H	3	101.136	0.718	0.989	0.571
					102.850

CASE ----- RUN SERIES 2, LOG 2.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 4.50
 NOMINAL PC ----- 546.0 PSIA INTERSTAGE ----- OFF

REMARKS: EVALUATION OF LOW O/F AND PC. THRUST STRUCTURE DATA QUESTIONABLE RUNS
 139-168 DUE TO APPARENT NOZZLE ADAPTER LEAKAGE FWD OF HEAT SHIELD. NO 3 ENG NOZZLE ADAPTER RE-
 PLACED BY 0.6 DEG GIMBAL ADAPTER DUE TO LEAKAGE RUNS 293-298. PREMATURE FLOW RUNS 333,335,336.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P001	6	0.018	0.001	0.001	0.000
P002	6	0.025	0.002	0.002	0.001
P003	6	0.022	0.003	0.004	0.002
P005	6	0.022	0.002	0.002	0.001
P006	6	0.023	0.001	0.001	0.001
P007	6	0.021	0.003	0.003	0.001
P008	5	0.017	0.002	0.002	0.001
P011	5	0.023	0.003	0.004	0.002
P016	17	0.001	0.000	0.000	0.000
P017	11	0.001	0.000	0.000	0.000
P018	17	0.000	0.000	0.001	0.000
Q001	23	1.341	0.755	0.780	0.163
Q002	22	2.225	1.248	1.293	0.276
Q003	20	4.347	1.307	1.359	0.304
Q004	21	4.424	1.109	1.151	0.251
Q007	6	1.390	0.178	0.204	0.083
Q008	17	3.170	1.284	1.344	0.326
Q009	23	3.648	1.453	1.502	0.313
Q011	19	1.784	0.494	0.514	0.118
Q013	16	1.996	0.378	0.397	0.099
Q015	17	2.594	0.725	0.759	0.184
Q016	16	2.023	0.318	0.334	0.083
Q017	6	0.583	0.076	0.088	0.036
Q019	16	1.742	0.447	0.469	0.117
					0.019
					0.028
					0.027
					0.024
					0.025
					0.025
					0.020
					0.028
					0.002
					0.001
					0.001
					1.829
					3.052
					5.258
					5.178
					1.641
					4.148
					4.587
					2.138
					2.294
					3.146
					2.274
					0.691
					2.094

CASE ----- RUN SERIES 2, LOG 2.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 4.50
 NOMINAL PC ----- 546.0 PSIA INTERSTAGE ----- OFF

REMARKS: EVALUATION OF LOW O/F AND PC. THRUST STRUCTURE DATA QUESTIONABLE RUNS 139-168 DUE TO APPARENT NOZZLE ADAPTER LEAKAGE FWD OF HEAT SHIELD. NO 3 ENG NOZZLE ADAPTER RE-PLACED BY 0.6 DEG GIMBAL ADAPTER DUE TO LEAKAGE RUNS 293-298. PREMATURE FLOW RUNS 333,335,336.

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV		
Q022	16	0.042	0.022	0.023	0.006	0.059
Q023	17	0.034	0.017	0.018	0.004	0.047
Q024	16	0.039	0.025	0.026	0.007	0.058
Q025	16	0.075	0.046	0.049	0.012	0.112
Q030	6	0.009	0.002	0.002	0.001	0.012
Q031	15	0.014	0.006	0.006	0.002	0.019
Q032	6	0.040	0.008	0.010	0.004	0.052
Q033	1	0.000	0.0	0.0	0.0	0.000
Q034	6	0.023	0.002	0.003	0.001	0.026
Q035	17	0.028	0.014	0.014	0.003	0.039
Q036	17	0.030	0.020	0.021	0.005	0.045
Q037	6	0.056	0.008	0.010	0.004	0.068
Q041	6	0.023	0.003	0.003	0.001	0.027
Q052	5	0.939	0.335	0.398	0.178	1.473

CASE ----- RUN SERIES 2, LOG 2.3

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EVALUATION OF INCREASED MIXTURE RATIO WITH INTERSTAGE SKIRT IN PLACE

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P016	3	0.030	0.002	0.002	0.033
P017	4	0.028	0.003	0.004	0.034
P018	5	0.030	0.004	0.004	0.035
Q001	5	1.817	0.465	0.553	2.559
Q002	5	2.900	0.741	0.881	4.091
Q003	5	5.339	0.659	0.783	6.389
Q004	5	5.359	0.776	0.922	6.596
Q008	5	4.160	0.801	0.952	5.437
Q009	5	4.652	0.609	0.724	5.623
Q011	5	2.909	0.336	0.399	3.444
Q013	5	2.709	0.355	0.421	3.275
Q015	5	4.001	0.630	0.748	5.005
Q016	5	3.461	0.330	0.392	3.987
Q019	5	3.058	0.456	0.542	3.785
Q022	5	0.319	0.079	0.094	0.444
Q023	5	1.067	0.216	0.257	1.412
Q024	5	1.150	0.449	0.533	1.865
Q025	5	0.384	0.120	0.142	0.575
Q031	5	0.713	0.205	0.243	1.040
Q035	5	0.685	0.398	0.461	1.303
Q036	5	0.895	0.294	0.349	1.363

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

DEFLECTIONS REMARKS: TO DETERMINE THE EFFECT OF INCREASED MIXTURE RATIO WITH LARGE ENGINE

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3 (ST DEV MEAN)
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P018	9	0.000	0.000	0.000	0.000
Q002	9	4.179	0.243	0.265	4.444
Q003	9	8.688	0.511	0.559	9.247
Q004	6	7.398	0.270	0.311	7.778
Q008	9	13.008	0.793	0.868	13.876
Q009	9	10.198	0.733	0.802	11.000
Q010	8	29.835	4.841	5.361	35.521
Q011	9	7.128	0.558	0.610	7.738
Q013	9	4.850	0.740	0.810	5.660
Q014	9	19.685	2.462	2.693	22.378
Q015	9	9.568	1.421	1.554	11.122
Q016	9	8.717	0.512	0.560	9.278
Q017	9	5.885	0.746	0.816	6.701
Q018	9	5.455	0.472	0.516	5.971
Q019	9	5.748	0.645	0.706	6.454
Q023	9	0.048	0.005	0.006	0.054
Q024	9	0.060	0.008	0.008	0.068
Q025	9	0.099	0.029	0.031	0.130
Q030	9	0.010	0.005	0.005	0.015
Q032	8	0.049	0.008	0.009	0.059
Q052	7	7.299	0.585	0.658	8.045

GIMRAL PATTERN --- 3C MIXTURE RATIO ----- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: PC INDICATES STEADY FLOW, HOWEVER, O/F UNCERTAIN SINCE VENTURI FLO VARIED
 WITH TIME & DETONATION RUPTURED NOZ. DIAPHRAGMS AT START OF COMRUSTION RNS 255,258,259,261. HEAT
 -ED COMP Q7H REPLACED Q7. Q50 @ P17 LOC. FACING P16 RNS 258-260, FACING P18 RNS 261-263

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL	UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA						
P016	10	0.003	0.004	0.004	0.001	0.006
P017	5	0.000	0.000	0.000	0.000	0.000
P018	11	0.000	0.000	0.000	0.000	0.000
Q004	10	6.489	0.415	0.449	0.142	6.916
Q010	10	21.302	2.772	3.003	0.950	24.151
Q022	7	0.014	0.003	0.003	0.001	0.017
Q023	4	0.045	0.006	0.008	0.004	0.056
Q024	10	0.064	0.014	0.015	0.005	0.078
Q025	11	0.092	0.016	0.018	0.005	0.108
Q030	11	0.012	0.005	0.006	0.002	0.017
Q031	11	0.025	0.007	0.007	0.002	0.031
Q032	11	0.022	0.006	0.007	0.002	0.028
Q033	11	0.014	0.006	0.007	0.002	0.020
Q034	11	0.017	0.003	0.003	0.001	0.020
Q035	11	0.039	0.008	0.009	0.003	0.047
Q036	11	0.045	0.011	0.012	0.004	0.056
Q037	9	0.061	0.016	0.018	0.006	0.079
Q040	4	0.024	0.010	0.013	0.006	0.043
Q041	6	0.023	0.005	0.006	0.002	0.030
Q050	5	0.082	0.056	0.067	0.030	0.171
Q051	6	0.010	0.008	0.009	0.004	0.022
Q07H	11	2.900	0.618	0.664	0.200	3.501
T07H	11	104.797	3.929	4.224	1.274	108.617

CASE ----- RUN SERIES 3.1A

GIMBAL PATTERN --- 3CA MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: Q7 REPLACED BY HEATED COMPONENT Q7H. ROD GAGES Q50 & Q51 ON THE THRUST
 CONE AT P17 AND P15 LOCATION RESPECTIVELY RUNS 454-458, AT P15 AND P17 RESPECTIVELY RUNS 459-461

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P016	8	0.002	0.000	0.000	0.002
P018	7	0.001	0.000	0.000	0.001
Q023	8	0.065	0.008	0.009	0.074
Q024	8	0.091	0.018	0.020	0.112
Q025	7	0.179	0.040	0.045	0.230
Q030	7	0.014	0.008	0.009	0.024
Q031	7	0.029	0.006	0.007	0.036
Q032	6	0.031	0.007	0.008	0.041
Q033	8	0.009	0.003	0.004	0.013
Q034	8	0.014	0.004	0.004	0.019
Q036	6	0.047	0.019	0.022	0.074
Q037	5	0.062	0.010	0.012	0.078
Q040	5	0.029	0.006	0.007	0.038
Q041	8	0.019	0.003	0.004	0.023
Q050	8	0.088	0.026	0.029	0.119
Q051	8	0.006	0.005	0.005	0.011
Q07H	7	11.899	1.876	2.110	14.292
T07H	8	105.651	1.837	2.034	107.809

CASE ----- RUN SERIES 3, LOG 3.2A (Q50 @ P17, Q51 @ P15 RNS 470-473)

GIMBAL PATTERN --- 3CA MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: ATTEMPT TO DETERMINE RECOVERY TEMPERATURE FOR LARGE DEFLECTIONS. Q7H
 DATA QUESTIONABLE DUE TO POORLY DEFINED GAGE PROPERTIES AT HIGH TEMP. Q51 DATA WHEN INSTALLED AT
 P15 WAS POOR, READINGS REPORTED GENERALLY LESS THAN THE NOISE LEVEL. Q50@P15, Q51@P17 RNS 463-469

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(O) IN RTU/SQ-FT-SEC, (P) IN PSIA

P016	10	0.002	0.000	0.000	0.002
P018	10	0.001	0.000	0.000	0.001
Q022	10	0.019	0.006	0.006	0.025
Q023	11	0.062	0.006	0.007	0.068
Q024	11	0.091	0.011	0.012	0.102
Q025	11	0.202	0.015	0.016	0.216
Q030	11	0.012	0.003	0.003	0.015
Q031	11	0.021	0.007	0.007	0.027
Q032	11	0.035	0.005	0.005	0.040
Q033	11	0.005	0.003	0.003	0.008
Q034	11	0.012	0.002	0.002	0.014
Q036	11	0.044	0.017	0.018	0.061
Q037	11	0.048	0.022	0.024	0.070
Q040	10	0.015	0.009	0.010	0.025
Q041	11	0.022	0.011	0.011	0.033
Q050	11	0.075	0.017	0.018	0.091
Q051	9	0.012	0.007	0.007	0.019
Q07H	11	12.990	1.517	1.631	14.465
T07H	11	953.919	164.330	177.197	1114.200

CASE ----- RUN SERIES 3, LOG 3.3

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: Q7 REPLACED BY HEATED COMPONENT Q7H. ROD GAGES Q50 & 51 MOUNTED ON TC.
 THIS SERIES CONSISTS OF 15 RUNS, 8 NOT REPORTED DUE TO POOR COMBUSTOR PERFORMANCE. Q50 AND Q51
 AT P17 AND P15 RESPECTIVELY.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC. (P) IN PSIA

P016	7	0.003	0.001	0.001	0.004
P018	5	0.002	0.002	0.001	0.005
Q004	8	7.220	0.350	0.387	7.631
Q010	8	27.674	1.850	2.049	29.847
Q022	8	0.012	0.005	0.002	0.017
Q023	6	0.046	0.006	0.003	0.055
Q024	8	0.064	0.017	0.019	0.084
Q025	8	0.117	0.021	0.023	0.142
Q030	7	0.006	0.001	0.001	0.008
Q031	7	0.024	0.004	0.002	0.030
Q032	8	0.052	0.008	0.003	0.061
Q033	8	0.014	0.004	0.002	0.019
Q034	8	0.029	0.007	0.003	0.038
Q035	8	0.060	0.008	0.003	0.070
Q036	8	0.062	0.009	0.003	0.072
Q037	8	0.084	0.007	0.003	0.093
Q040	8	0.028	0.008	0.003	0.038
Q041	8	0.036	0.036	0.014	0.078
Q050	5	0.198	0.068	0.036	0.305
Q051	5	0.021	0.031	0.017	0.071
Q07H	7	4.157	1.283	1.444	5.795
T07H	8	110.775	20.579	22.786	134.943

CASE ----- RUN SERIES 3, LOGS 3.3A AND 3.4A

GIMBAL PATTERN --- 3CA MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: HEATED Q7H REPLACES Q7. ROD GAGES Q50 AND Q51 INSTALLED ON THRUST CONE.
 T7H TEMPS TABULATED ARE PRETEST GOAL, NO TEST VALUES RECORDED. Q50 & 51 POSN NOT SPECIFIED BUT
 APPEAR TO BE AT P17 AND P15 LOCATIONS RESPECTIVELY. DIFF BTWN 3.3A & 3.4A IS THE T7H TEMP DESRD.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

P016	3	0.001	0.000	0.000	0.001
P018	4	0.001	0.000	0.000	0.002
Q022	5	0.015	0.010	0.012	0.031
Q023	5	0.067	0.008	0.010	0.080
Q024	5	0.100	0.005	0.007	0.108
Q025	5	0.231	0.017	0.021	0.259
Q030	5	0.014	0.005	0.006	0.022
Q031	5	0.018	0.004	0.004	0.023
Q032	5	0.044	0.004	0.005	0.051
Q033	5	0.009	0.003	0.004	0.013
Q034	5	0.014	0.002	0.002	0.018
Q036	5	0.048	0.024	0.029	0.087
Q037	5	0.056	0.004	0.005	0.063
Q040	5	0.033	0.002	0.003	0.037
Q041	5	0.016	0.002	0.003	0.020
Q050	5	0.129	0.023	0.027	0.165
Q051	5	0.005	0.004	0.004	0.011
Q07H	4	9.794	2.661	3.328	14.786
T07H	4	869.871	82.021	102.602	1023.773

CASE ----- RUN SERIES 3, LOG 3.4

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: Q7 REPLACED BY HEATED COMPONENT Q7H. ROD GAGES Q50 AND Q51 ON THRUST
 STRUCTURE APPEAR TO BE LOCATED AT P17 AND P15 LOCATIONS RESPECTIVELY.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P016	5	0.004	0.000	0.001	0.000
P018	4	0.003	0.001	0.001	0.001
Q004	3	5.972	0.105	0.144	0.083
Q010	3	30.168	2.197	3.027	1.748
Q022	5	0.016	0.003	0.003	0.001
Q023	5	0.056	0.005	0.006	0.003
Q024	5	0.073	0.014	0.017	0.008
Q025	5	0.142	0.009	0.011	0.005
Q030	5	0.008	0.002	0.003	0.001
Q031	5	0.029	0.003	0.004	0.002
Q032	5	0.057	0.004	0.005	0.002
Q033	5	0.013	0.004	0.005	0.002
Q034	4	0.029	0.004	0.005	0.002
Q035	4	0.063	0.005	0.006	0.003
Q036	5	0.075	0.007	0.008	0.003
Q037	5	0.098	0.014	0.017	0.008
Q040	5	0.036	0.009	0.010	0.005
Q041	4	0.027	0.010	0.013	0.007
Q050	5	0.182	0.011	0.013	0.006
Q051	4	0.002	0.004	0.005	0.002
Q07H	4	2.439	0.589	0.737	0.368
T07H	4	542.828	168.201	210.407	105.203
					858.438

CASE ----- RUN SERIES 4, LOG 4.1

GIMBAL PATTERN ---- NO DEFLECTION MIXTURE RATIO ----- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DEFINE ENVIRONMENT ON THE EXTERIOR OF AN INOPERATIVE ENGINE NO 5

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(O) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P018	3	0.000	0.000	0.000	0.000
Q0G2	3	0.786	0.243	0.335	1.366
Q0G4	3	0.843	0.228	0.314	1.387
Q0G5	1	0.730	0.0	0.0	0.730
Q0G6	1	0.730	0.0	0.0	0.730
Q0G7	3	0.582	0.067	0.093	0.742
Q0G8	2	0.592	0.028	0.049	0.696
Q0H1	2	2.367	0.043	0.077	2.530
Q0H3	3	1.055	0.061	0.084	1.200
Q0H4	3	0.805	0.136	0.187	1.129
Q0H5	3	0.881	0.056	0.078	1.016
Q0H7	3	0.728	0.025	0.034	0.787
Q0H8	3	0.754	0.038	0.052	0.845
Q0J1	3	1.837	0.138	0.190	2.167
Q0J6	3	0.651	0.073	0.100	0.824
Q0J7	3	0.380	0.036	0.050	0.467
Q0J8	3	0.751	0.068	0.094	0.915
Q0J9	3	1.116	0.340	0.468	1.927
Q0N1	1	0.568	0.0	0.0	0.568
Q0N2	2	0.797	0.015	0.026	0.851
Q0N3	2	5.912	1.864	3.296	12.903
Q0N5	2	7.345	1.867	3.301	14.348

RUN SERIES 4, LOG 4.2

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2
632.0 PSIA
MIXTURE RATIO ---- 5.00
INTERSTAGE ----- OFF

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ENVIRONMENT OF INOPERATIVE ENGINE NO 3

STATISTICAL ANALYSIS OF NORMALIZED DATA

SAMPLE MEAN	STANDARD DEVIATION		(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	SAMPLE MEAN + 3(ST DEV MEAN)	
	SMPL	UNIV		MEAN	
0.000	0.000	0.000	0.000	0.000	0.000
0.532	0.237	0.296	0.000	0.148	0.976
0.432	0.072	0.100	0.058	0.058	0.604
0.564	0.081	0.101	0.050	0.050	0.715
0.594	0.166	0.207	0.104	0.104	0.905
0.506	0.032	0.040	0.020	0.020	0.567
0.431	0.022	0.039	0.028	0.028	0.514
0.614	0.257	0.321	0.160	0.160	1.095
0.639	0.142	0.177	0.089	0.089	0.905
0.589	0.411	0.514	0.257	0.257	1.360
0.885	0.065	0.089	0.051	0.051	1.039
0.941	0.0	0.0	0.0	0.0	0.941
0.968	0.043	0.060	0.034	0.034	1.071
1.418	0.066	0.091	0.052	0.052	1.576
0.608	0.101	0.127	0.063	0.063	0.798
0.716	0.069	0.086	0.043	0.043	0.844
0.677	0.350	0.438	0.219	0.219	1.333
0.511	0.306	0.383	0.191	0.191	1.085
1.376	0.340	0.426	0.213	0.213	2.015
0.000	0.000	0.000	0.000	0.000	0.000
0.212	0.018	0.023	0.011	0.011	0.246
0.109	0.122	0.168	0.097	0.097	0.400
0.246	0.150	0.187	0.094	0.094	0.528

CASE ----- RUN SERIES 4, LOG 4.2A

GIMBAL PATTERN --- 2A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NO 2 ENGINE OUT WITH NOZZLE INSTRUMENTED. LOCATION OF EXTERIOR GAGE ROW
 M NOT DEFINED IN DATA FOR THIS RUN. FULL SCALE DISTANCES FWD OF NOZZLE EXIT PLANE ARE
 QM1 (1 INCH), QM6 (16), QM7 (19) AND QM8 (22)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC					
Q0M1	3	0.901	0.160	0.220	0.127
Q0M6	3	0.559	0.095	0.131	0.075
Q0M7	3	0.487	0.058	0.080	0.046
Q0M8	3	0.954	0.158	0.217	0.126
Q001	2	3.401	0.645	1.141	0.807
Q002	1	3.372	0.0	0.0	0.0
Q003	3	2.945	0.421	0.580	0.335
Q004	2	5.145	0.666	1.177	0.832
Q008	3	2.211	0.276	0.381	0.220
Q009	3	2.590	0.280	0.386	0.223
Q010	3	2.112	0.328	0.452	0.261
Q011	2	1.419	0.373	0.660	0.466
Q013	3	2.393	0.136	0.187	0.108
Q014	3	1.064	0.033	0.045	0.026
Q015	3	2.790	0.308	0.424	0.245
Q016	3	1.542	0.104	0.143	0.083
Q017	3	1.729	0.215	0.296	0.171
Q019	3	1.643	0.480	0.661	0.381
Q022	3	0.006	0.004	0.006	0.003
Q023	3	0.043	0.026	0.036	0.021
Q024	3	0.067	0.033	0.046	0.026
Q025	3	0.131	0.052	0.072	0.041
Q031	3	0.017	0.003	0.005	0.003
Q052	3	3.837	0.130	0.179	0.104
					1.283
					0.785
					0.626
					1.330
					5.821
					3.372
					3.949
					7.641
					2.870
					3.259
					2.895
					2.818
					2.718
					1.142
					3.525
					1.790
					2.242
					2.788
					0.016
					0.106
					0.146
					0.255
					0.025
					4.148

CASE ----- RUN SERIES 4, LOG 4.3

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF BASE ENVIRONMENT WITH A SINGLE 7.5 DEG ACTUATOR
 FAILURE INBOARD ON ENGINE NO 4.
 (RUNS 234 AND 234A LABLED THE SAME)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P018	3	0.000	0.000	0.000	0.000
Q001	2	5.933	0.610	1.079	0.763
Q002	6	4.179	0.458	0.527	0.215
Q003	6	7.830	0.425	0.489	0.200
Q004	6	5.986	0.237	0.273	0.111
Q008	6	10.977	1.085	1.248	0.510
Q009	6	8.554	0.534	0.614	0.251
Q010	6	27.949	4.081	4.694	1.916
Q011	5	6.888	0.952	1.131	0.506
Q013	5	4.601	0.589	0.700	0.313
Q014	6	16.345	1.798	2.068	0.844
Q015	5	8.726	1.311	1.558	0.697
Q016	6	8.263	0.793	0.912	0.372
Q017	6	4.449	0.466	0.536	0.219
Q018	5	4.703	0.453	0.538	0.241
Q019	6	4.407	0.459	0.528	0.216
Q022	2	0.007	0.002	0.003	0.002
Q023	4	0.036	0.001	0.001	0.001
Q024	6	0.039	0.003	0.003	0.001
Q025	4	0.057	0.016	0.020	0.010
Q030	2	0.006	0.006	0.011	0.008
Q032	4	0.036	0.006	0.008	0.004
Q052	4	6.144	0.451	0.565	0.282
					6.991

CASE ----- RUN SERIES 4, LOG 4.4

GIMBAL PATTERN --- 4A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: DUAL ACTUATOR FAILURE ON ENGINE NO 3 AT 7.5 DEG WITH 210 INCH HEAT SHIELD . NOTE THAT THIS DEFLECTION PATTERN DOES NOT GIVE MAXIMUM HEATING FOR DUAL 7.5 DEG FAIL.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL	UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

P016	4	0.001	0.000	0.000	0.002
P017	4	0.000	0.000	0.000	0.000
P018	4	0.000	0.000	0.000	0.000
Q001	4	4.928	1.259	1.575	7.290
Q003	4	3.239	0.077	0.096	3.383
Q004	4	2.612	0.270	0.338	3.119
Q008	4	3.549	0.267	0.334	4.050
Q010	4	2.941	0.324	0.405	3.549
Q011	4	2.156	0.060	0.075	2.269
Q013	4	3.300	0.167	0.209	3.615
Q014	4	1.592	0.185	0.231	1.938
Q016	4	1.421	0.067	0.083	1.546
Q021	4	0.002	0.003	0.004	0.007
Q023	4	0.083	0.012	0.015	0.105
Q024	4	0.108	0.007	0.008	0.120
Q025	4	0.185	0.027	0.034	0.236
Q030	3	0.007	0.002	0.003	0.011
Q034	4	0.036	0.008	0.010	0.050
Q035	3	0.042	0.010	0.014	0.067
Q036	4	0.075	0.024	0.030	0.120
Q037	4	0.071	0.023	0.028	0.114
Q043	4	0.102	0.030	0.038	0.158

CASE ----- RUN SERIES 4, LOG 4.5.1A

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF OUTBOARD ENGINE OUT WITH DEFLECTION CASE WHICH DOES NOT
INCLUDE THRUST STRUCTURE COMPLIANCE. ALSO SEE LOG 4.5.18 FOR ADDITIONAL DATA . NON FLOWING
NOZZLE AT POSITION NO 3.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)	
			SMPL	UNIV		
BTU/SQ-FT-SEC						
Q001	4	4.180	0.428	0.535	0.267	4.982
Q002	3	5.470	0.469	0.646	0.373	6.588
Q003	4	6.127	0.464	0.581	0.290	6.999
Q004	5	4.912	0.630	0.748	0.334	5.915
Q008	4	8.382	0.614	0.768	0.384	9.535
Q009	5	9.286	0.837	0.995	0.445	10.620
Q010	5	4.176	0.611	0.726	0.325	5.150
Q011	5	1.504	0.291	0.346	0.155	1.968
Q013	5	3.368	0.567	0.673	0.301	4.271
Q014	4	3.190	0.462	0.578	0.289	4.057
Q015	1	6.150	0.0	0.0	0.0	6.150
Q016	5	2.592	0.204	0.243	0.109	2.918
Q017	5	2.694	0.182	0.216	0.096	2.983
Q023	5	0.102	0.011	0.013	0.006	0.120
Q025	5	0.261	0.022	0.026	0.012	0.296
Q031	4	0.054	0.008	0.010	0.005	0.070
Q032	5	0.083	0.007	0.008	0.003	0.093
Q044	5	0.155	0.012	0.014	0.006	0.174
Q053	5	0.077	0.008	0.010	0.004	0.090
Q054	5	1.772	0.102	0.121	0.054	1.935
Q055	5	0.300	0.032	0.038	0.017	0.350
Q24T	5	0.129	0.008	0.009	0.004	0.141

CASE ----- RUN SERIES 4, LOG 4.5.1B

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF OUTBOARD ENGINE OUT WITH DEFLECTION CASE WHICH DOES NOT INCLUDE THRUST STRUCTURE COMPLIANCE. ALSO SEE LOG 4.5.1A DATA. NON FLOWING NOZZLE AT POSITION NO 3.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID NO. OF SAMPLES SAMPLE MEAN STANDARD DEVIATION SMPL UNIV MEAN SAMPLE MEAN + 3(1ST DEV MEAN)

BTU/SQ-FT-SEC

Q006	6	4.817	0.315	0.362	0.148	5.260
Q007	6	3.600	0.237	0.273	0.111	3.934
Q015	6	5.408	1.273	1.464	0.598	7.201
Q019	6	6.252	0.424	0.488	0.199	6.849
Q020	4	0.001	0.000	0.001	0.000	0.002
Q021	2	0.007	0.003	0.006	0.004	0.021
Q022	6	0.026	0.005	0.005	0.002	0.032
Q030	6	0.029	0.007	0.008	0.003	0.039
Q033	6	0.031	0.006	0.007	0.003	0.040
Q034	6	0.054	0.007	0.008	0.003	0.064
Q035	6	0.136	0.002	0.002	0.001	0.139
Q036	5	0.112	0.005	0.006	0.003	0.120
Q037	5	0.130	0.007	0.008	0.003	0.140
Q038	4	0.002	0.002	0.002	0.001	0.005
Q040	6	0.025	0.006	0.007	0.003	0.034
Q041	6	0.022	0.004	0.004	0.002	0.027
Q043	5	0.011	0.001	0.001	0.001	0.013
Q052	6	2.962	0.443	0.510	0.208	3.586
Q110	2	0.717	0.193	0.341	0.241	1.441
Q111	2	0.360	0.0	0.0	0.0	0.360

CASE ----- RUN SERIES 4, LOG 4.5.2A

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: OUTBOARD ENGINE OUT ENVIRONMENT WITH DEFLECTION CASES WHICH DO NOT
 INCLUDE THRUST STRUCTURE COMPLIANCE. SEE LOG 4.5.2B FOR ADDITIONAL DATA. NON-FLOWING NOZZLE
 AT POSITION NO. 3.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	7	3.074	0.425	0.478	0.181
Q002	7	4.810	0.662	0.745	0.282
Q003	7	5.484	0.613	0.689	0.261
Q004	7	4.836	0.439	0.494	0.187
Q006	7	4.581	0.260	0.292	0.110
Q007	6	3.775	0.217	0.250	0.102
Q008	7	7.536	0.911	1.025	0.387
Q009	7	8.241	0.710	0.798	0.302
Q010	7	3.233	0.379	0.426	0.161
Q011	7	1.119	0.490	0.551	0.208
Q013	7	2.797	1.018	1.145	0.433
Q014	7	2.179	0.497	0.559	0.211
Q015	7	4.540	1.315	1.480	0.559
Q016	7	1.961	0.388	0.437	0.165
Q017	7	2.296	0.136	0.153	0.058
Q019	7	6.069	0.575	0.647	0.245
Q024	5	1.976	0.201	0.239	0.107
Q025	7	0.881	0.059	0.066	0.025
Q046	6	0.390	0.072	0.083	0.034
Q052	7	2.394	0.359	0.404	0.153
Q054	7	0.964	0.113	0.127	0.048
Q110	4	1.267	0.174	0.217	0.109
Q111A	2	1.510	0.110	0.194	0.138

CASE ----- RUN SERIES 4, LOG 4.5.28

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: OUTBOARD ENGINE OUT ENVIRONMENT WITH DEFLECTION CASE WHICH DOES NOT
 INCLUDE THRUST STRUCTURE COMPLIANCE. SEE LOG 4.5.2A FOR ADDITIONAL DATA. INTERSTAGE GAGES 26-29
 AT 29.2 DEGREES. NON-FLOWING NOZZLE IN POSITION NO 3.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
RTU/SQ-FT-SEC					
Q020	6	0.020	0.017	0.020	0.008
Q022	6	0.144	0.033	0.038	0.016
Q023	4	2.117	0.398	0.497	0.249
Q026	3	0.232	0.091	0.125	0.072
Q027	4	1.388	0.456	0.570	0.285
Q028	5	1.714	0.517	0.614	0.275
Q029	6	0.307	0.056	0.064	0.026
Q030	6	0.078	0.022	0.025	0.010
Q031	6	1.270	0.121	0.139	0.057
Q032	5	0.993	0.288	0.342	0.153
Q035	6	0.473	0.047	0.054	0.022
Q036	6	1.325	0.175	0.202	0.082
Q037	6	1.858	0.350	0.403	0.164
Q038	6	0.224	0.060	0.069	0.028
Q040	6	0.885	0.110	0.127	0.052
Q043	5	0.123	0.020	0.024	0.011
Q044	6	0.243	0.074	0.085	0.035
Q120	2	0.529	0.015	0.026	0.018
Q121	2	1.655	0.065	0.115	0.081
Q122	2	0.685	0.050	0.088	0.063
					0.044
					0.191
					2.864
					0.449
					2.243
					2.538
					0.385
					0.109
					1.440
					1.452
					0.540
					1.572
					2.351
					0.308
					1.041
					0.155
					0.347
					0.584
					1.899
					0.873

CASE ----- RUN SERIES 5, LOG 5.1

GIMBAL PATTERN --- 5 MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF SINGLE ACTUATOR FAILURE EFFECTS. ACTUATOR FAILED AT 5 DEGREES INBOARD.

NOTE CASES 216, 216A AND 218, 218A

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P016	10	0.001	0.001	0.001	0.000
P017	10	0.000	0.000	0.000	0.000
P018	11	0.000	0.000	0.000	0.000
Q001	9	5.634	0.677	0.740	0.247
Q002	10	6.176	0.724	0.784	0.248
Q003	10	6.208	0.603	0.653	0.207
Q004	1	7.217	0.0	0.0	0.0
Q008	10	9.829	0.619	0.671	0.212
Q009	10	8.625	0.543	0.589	0.186
Q010	1	3.498	0.0	0.0	0.0
Q011	10	3.335	0.556	0.603	0.191
Q013	10	6.185	1.246	1.350	0.427
Q014	1	9.314	0.0	0.0	0.0
Q015	10	7.124	0.638	0.691	0.218
Q016	10	3.568	0.747	0.809	0.256
Q017	1	3.770	0.0	0.0	0.0
Q018	1	4.425	0.0	0.0	0.0
Q019	11	4.550	0.299	0.322	0.097
Q022	11	0.011	0.010	0.011	0.003
Q023	11	0.038	0.007	0.007	0.002
Q024	10	0.039	0.014	0.015	0.005
Q025	11	0.061	0.013	0.014	0.004
Q034	9	0.034	0.018	0.020	0.007
Q035	8	0.034	0.004	0.004	0.001

CASE ----- RUN SERIES 5, LOG 5.1

GIMBAL PATTERN --- 5 MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF SINGLE ACTUATOR FAILURE EFFECTS. ACTUATOR FAILED AT
5 DEGREES INBOARD.
NOTE CASES 216, 216A AND 218, 218A

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

0036	11	0.031	0.004 0.004	0.001 0.035
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CASE ----- RUN SERIES 5, LOG 5.2

GIMBAL PATTERN --- 6 MIXTURE RATIO ----- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO INVESTIGATE THE EFFECTS OF SINGLE ACTUATOR FAILURE INBOARD. ACTUATOR
 FAILED AT 3 DEGREES.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV		
P016	8	0.001	0.000	0.000	0.000	0.002
P017	9	0.000	0.000	0.000	0.000	0.000
P018	10	0.000	0.000	0.000	0.000	0.000
Q001	10	4.498	0.902	0.977	0.309	5.425
Q002	10	6.191	1.256	1.361	0.430	7.482
Q003	7	7.522	1.856	2.088	0.789	9.889
Q004	8	7.933	0.799	0.884	0.313	8.871
Q008	9	10.560	0.998	1.091	0.364	11.652
Q009	10	9.062	1.134	1.229	0.388	10.228
Q010	7	3.174	0.527	0.593	0.224	3.847
Q011	7	1.918	0.212	0.239	0.090	2.189
Q013	7	3.872	0.495	0.557	0.210	4.503
Q014	4	2.287	0.777	0.972	0.486	3.744
Q015	10	4.466	0.753	0.816	0.258	5.240
Q016	10	2.457	0.321	0.348	0.110	2.787
Q017	4	3.456	0.218	0.273	0.137	3.865
Q018	5	2.680	0.460	0.546	0.244	3.413
Q019	10	2.582	0.781	0.846	0.268	3.385
Q022	10	0.013	0.010	0.011	0.003	0.023
Q023	10	0.049	0.017	0.019	0.006	0.066
Q024	5	0.061	0.018	0.021	0.009	0.089
Q025	10	0.100	0.024	0.026	0.008	0.125
Q034	4	0.035	0.015	0.019	0.009	0.063
Q035	3	0.040	0.003	0.004	0.002	0.047

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 5, LOG 5.2

GIMBAL PATTERN --- 6 MIXTURE RATIO ----- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO INVESTIGATE THE EFFECTS OF SINGLE ACTUATOR FAILURE INBOARD. ACTUATOR
FAILED AT 3 DEGREES.

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

Q036	10	0.038	0.006	0.002	0.044
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CASE ----- RUN SERIES 6, LOG 6.1

GIMBAL PATTERN --- 4A MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INSTRUMENTED FLOWING NOZZLE INSTALLED WITH QN2 OPPOSITE ENGINE NO 3 TO
EVALUATE HEATING OF NOZZLE LIP WITH DUAL 7.5 DEG ACTUATOR FAILURE

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
N001	5	4.121	0.650	0.772	0.345
N002	10	58.946	5.107	5.533	1.750
Q002	9	4.041	0.941	1.029	0.343
Q003	7	2.936	0.772	0.869	0.328
Q004	5	3.186	0.872	1.036	0.463
Q008	10	3.869	0.267	0.289	0.092
Q010	9	2.633	0.320	0.350	0.117
Q013	10	1.821	0.260	0.282	0.089
Q015	10	2.771	0.436	0.472	0.149
Q016	9	0.502	0.040	0.043	0.014
Q019	10	1.426	0.160	0.173	0.055
Q022	8	0.009	0.003	0.003	0.001
Q023	10	0.038	0.005	0.005	0.002
Q024	10	0.043	0.007	0.008	0.003
Q025	10	0.069	0.016	0.017	0.005
Q034	9	0.017	0.001	0.002	0.001
Q035	9	0.037	0.011	0.012	0.004
Q036	10	0.043	0.006	0.006	0.002
Q037	8	0.057	0.008	0.009	0.003
Q043	8	0.013	0.007	0.007	0.003
					5.156
					64.195
					5.070
					3.921
					4.576
					4.143
					2.983
					2.088
					3.218
					0.546
					1.590
					0.012
					0.043
					0.050
					0.085
					0.018
					0.049
					0.049
					0.067
					0.021

CASE ----- RUN SERIES 6, LOG 6.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INSTRUMENTED FLOWING NOZZLE INSTALLED WITH QN2 OPPOSITE ENGINE 3 TO
 EVALUATE HEATING OF THE NOZZLE LIP WITH NO ENGINE DEFLECTIONS. LIP GAGES INSTALLED IN POSN 5.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC

N001	6	2.132	0.179	0.205	0.084	2.384
N002	5	1.444	0.102	0.121	0.054	1.606
Q002	6	2.200	0.628	0.722	0.295	3.085
Q003	6	3.040	0.517	0.595	0.243	3.769
Q004	6	4.491	0.462	0.531	0.217	5.142
Q008	6	2.092	0.334	0.385	0.157	2.563
Q010	4	1.961	0.312	0.390	0.195	2.546
Q013	6	2.394	0.144	0.166	0.068	2.597
Q015	6	3.411	0.922	1.060	0.433	4.709
Q016	6	1.162	0.073	0.083	0.034	1.264
Q019	6	1.044	0.076	0.087	0.036	1.151
Q022	6	0.011	0.002	0.003	0.001	0.014
Q023	6	0.054	0.005	0.006	0.002	0.061
Q024	6	0.065	0.006	0.007	0.003	0.073
Q025	6	0.116	0.021	0.024	0.010	0.145
Q034	6	0.022	0.002	0.002	0.001	0.024
Q035	6	0.049	0.008	0.009	0.004	0.060
Q036	6	0.058	0.006	0.007	0.003	0.066
Q037	6	0.079	0.006	0.007	0.003	0.088
Q043	6	0.013	0.001	0.002	0.001	0.015

CASE ----- RUN SERIES 7, LOG 7.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TESTS TO DETERMINE THRUST STRUCTURE HEATING WITH A LARGE HEAT SHIELD
 INTENDED TO SIMULATE A HEAT SHIELD FROM THE 6 ENGINE S-IV CONFIGURATION. ALTHOUGH 0.338 WAS
 LISTED ON ALL DATA SHEETS, THE DIAM. USED WAS PROB. 0.388 AS LISTED IN RUNS 175-183, LOG 8.1

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
RTU/SQ-FT-SEC					
Q002	5	1.436	0.309	0.367	0.164
Q003	6	4.562	0.855	0.983	0.402
Q004	6	4.514	0.619	0.712	0.291
Q008	6	2.560	1.185	1.362	0.556
Q009	6	3.394	1.311	1.508	0.616
Q010	5	3.105	0.386	0.459	0.205
Q011	6	2.546	0.392	0.451	0.184
Q013	6	2.289	0.782	0.899	0.367
Q014	6	1.437	0.107	0.123	0.050
Q015	6	3.182	0.678	0.780	0.318
Q016	6	2.451	0.375	0.432	0.176
Q017	5	0.965	0.186	0.221	0.099
Q018	5	1.034	0.291	0.346	0.155
Q019	6	1.639	0.445	0.511	0.209
Q023	5	0.027	0.003	0.004	0.002
Q024	5	0.040	0.006	0.007	0.003
Q025	6	0.080	0.014	0.016	0.007
Q031	6	0.016	0.005	0.006	0.003
Q032	5	0.023	0.003	0.004	0.002
Q052	4	2.045	0.354	0.443	0.221
					1.929
					5.767
					5.386
					4.229
					5.242
					3.721
					3.098
					3.391
					1.587
					4.137
					2.980
					1.262
					1.498
					2.265
					0.032
					0.049
					0.100
					0.024
					0.028
					2.709

CASE ----- RUN SERIES 8, LOG 8.1 AND 8.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOZZLE EXIT PLANE BASE PRESSURE USING PROBES PARALLEL TO (SERIES 8.2
 RNS 179-183) AND NORMAL TO (SERIES 8.1 RUNS 175-178) THE NOZZLE CENTERLINE.
 PROBE MOUNTED BETWEEN ENGINES 2,3 AND 5.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

P SPECIA	8	0.080	0.020	0.022	0.008	0.103
P017	9	0.000	0.000	0.000	0.000	0.001
P018	9	0.000	0.000	0.000	0.000	0.000
Q001	9	1.274	0.331	0.362	0.121	1.635
Q002	9	1.691	0.485	0.530	0.177	2.221
Q003	9	4.121	0.796	0.870	0.290	4.992
Q004	9	4.089	0.836	0.914	0.305	5.004
Q008	9	2.069	0.529	0.579	0.193	2.648
Q009	9	2.634	0.541	0.592	0.197	3.225
Q011	9	2.501	0.241	0.264	0.088	2.765
Q013	9	2.192	0.487	0.532	0.177	2.725
Q015	9	2.374	0.271	0.296	0.099	2.670
Q016	9	2.136	0.299	0.327	0.109	2.463
Q017	8	1.050	0.136	0.150	0.053	1.209
Q019	9	1.577	0.366	0.400	0.133	1.977
Q022	9	0.012	0.003	0.003	0.001	0.015
Q023	9	0.044	0.008	0.009	0.003	0.054
Q025	9	0.098	0.023	0.025	0.008	0.123
Q031	8	0.017	0.004	0.004	0.001	0.021
Q034	9	0.029	0.009	0.010	0.003	0.039
Q035	9	0.050	0.005	0.006	0.002	0.056

CASE ----- RUN SERIES 9, LOG 9.1.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF POSSIBLE BOUNDARY LAYER EFFECTS. FILLER MATERIAL
 REMOVED FROM TURBINE EXHAUST MANIFOLD AND INJECTION HOLES, SO THAT THE INITIAL VACUUM IN THIS
 VOLUME WOULD TEND TO REMOVE A PORTION OF THE NOZZLE BOUNDARY LAYER

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P016	9	0.001	0.001	0.001	0.001
P017	9	0.000	0.000	0.000	0.000
P018	9	0.000	0.000	0.000	0.000
Q001	9	1.006	0.326	0.356	1.362
Q002	9	1.257	0.391	0.428	1.635
Q003	8	2.908	0.715	0.792	3.748
Q004	8	4.404	0.564	0.625	5.066
Q008	9	2.017	0.422	0.462	2.479
Q009	9	2.318	0.468	0.512	2.830
Q011	9	2.559	0.219	0.240	2.799
Q013	7	3.193	0.304	0.342	3.581
Q015	9	2.814	0.398	0.435	3.249
Q016	6	2.318	0.172	0.198	2.560
Q017	9	1.052	0.408	0.446	1.498
Q019	9	1.998	0.285	0.312	2.311
Q022	9	0.012	0.004	0.005	0.017
Q023	9	0.059	0.007	0.008	0.067
Q024	9	0.101	0.055	0.061	0.161
Q025	9	0.161	0.059	0.064	0.225
Q030	8	0.007	0.003	0.003	0.011
Q034	9	0.025	0.004	0.005	0.030
Q035	5	0.066	0.004	0.005	0.073

CASE ----- RUN SERIES 9, LOG 9.1.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF POSSIBLE BOUNDARY LAYER EFFECTS. FILLER MATERIAL REMOVED FROM TURBINE EXHAUST MANIFOLD AND INJECTION HOLES, SO THAT THE INITIAL VACUUM IN THIS VOLUME WOULD TEND TO REMOVE A PORTION OF THE NOZZLE BOUNDARY LAYER

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/50-FT-SEC, (P) IN PSIA					
P001	8	0.023	0.005	0.005	0.029
P002	7	0.031	0.004	0.004	0.036
P003	7	0.026	0.003	0.004	0.030
P005	7	0.023	0.003	0.003	0.027
P006	8	0.023	0.002	0.002	0.025
P007	8	0.025	0.003	0.003	0.028
P008	8	0.021	0.002	0.002	0.024
P011	6	0.026	0.005	0.006	0.033
Q003	9	3.190	0.613	0.671	3.860
Q004	9	4.428	0.513	0.561	4.989
Q008	9	2.045	0.280	0.306	2.351
Q011	8	1.795	0.343	0.380	2.198
Q013	9	3.182	0.436	0.477	3.658
Q015	9	2.032	0.533	0.583	2.614
Q016	5	2.629	0.453	0.538	3.351
Q019	8	1.585	0.322	0.357	1.964
Q030	7	0.006	0.004	0.005	0.011
Q031	9	0.021	0.013	0.014	0.035
Q032	9	0.050	0.023	0.025	0.076
Q036	8	0.052	0.014	0.016	0.069
Q037	8	0.072	0.016	0.017	0.090

CASE ----- RUN SERIES 11, LOG 11.1

GIMBAL PATTERN --- 5A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SIMULATION OF A 5 DEGREE ACTUATOR FAILURE OUTBOARD ON ENGINE NUMBER 3

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	6	2.440	0.292	0.336	2.851
Q002	6	3.812	0.594	0.683	4.648
Q003	5	6.736	0.063	0.075	6.836
Q004	6	7.687	1.041	1.197	9.153
Q019	5	2.190	0.137	0.162	2.408
Q022	6	0.015	0.007	0.008	0.025
Q024	6	0.077	0.038	0.043	0.130
Q025	6	0.197	0.052	0.059	0.270
Q030	6	0.023	0.006	0.007	0.031
Q031	6	0.045	0.010	0.012	0.060
Q032	6	0.061	0.013	0.015	0.080
Q033	5	0.016	0.003	0.003	0.020
Q034	6	0.020	0.010	0.012	0.034
Q035	6	0.058	0.010	0.012	0.072
Q036	6	0.066	0.010	0.012	0.080
Q037	6	0.083	0.010	0.011	0.096
Q040	5	0.029	0.002	0.002	0.032
Q042	5	0.082	0.022	0.026	0.117
Q043	5	0.018	0.004	0.005	0.025
Q046	6	0.917	0.257	0.296	1.280

CASE ----- RUN SERIES 11, LOG 11.2

GIMBAL PATTERN --- 5A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SIMULATION OF A 5 DEGREE ACTUATOR FAILURE OUTBOARD ON ENGINE NUMBER 3,
 AND MAXIMUM ALTITUDE SIMULATED

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	6	2.118	0.447	0.514	0.210
Q002	6	3.807	0.617	0.710	0.290
Q003	6	6.984	0.959	1.103	0.450
Q004	6	8.575	0.862	0.992	0.405
Q019	5	2.317	0.423	0.502	0.225
Q022	5	0.015	0.004	0.004	0.002
Q024	5	0.100	0.009	0.010	0.004
Q025	5	0.222	0.011	0.013	0.005
Q030	5	0.021	0.005	0.005	0.002
Q031	5	0.046	0.005	0.006	0.003
Q032	6	0.063	0.005	0.006	0.003
Q033	4	0.016	0.003	0.004	0.002
Q034	5	0.029	0.007	0.008	0.003
Q035	6	0.056	0.012	0.014	0.006
Q036	5	0.074	0.012	0.014	0.006
Q037	5	0.089	0.013	0.015	0.006
Q040	6	0.023	0.003	0.004	0.002
Q042	6	0.095	0.021	0.024	0.010
Q043	5	0.018	0.002	0.003	0.001
Q046	5	0.680	0.117	0.135	0.055
					2.748
					4.676
					8.335
					9.790
					2.990
					0.021
					0.112
					0.238
					0.027
					0.054
					0.071
					0.021
					0.039
					0.073
					0.090
					0.107
					0.028
					0.124
					0.021
					0.845

CASE ----- RUN SERIES 11, LOG 11.3

GIMBAL PATTERN --- 5B MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SIMULATION OF A 5 DEGREE ACTUATOR FAILURE OUTBOARD ON ENGINE NUMBER 1

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	3	2.716	0.319	0.440	3.478
Q002	3	4.335	0.231	0.318	4.887
Q003	3	5.533	0.311	0.428	6.274
Q004	3	6.968	1.264	1.741	9.984
Q019	3	4.595	0.170	0.234	5.001
Q022	3	0.019	0.006	0.008	0.033
Q024	2	0.112	0.016	0.027	0.171
Q025	2	0.229	0.040	0.072	0.381
Q030	2	0.023	0.002	0.003	0.029
Q031	3	0.039	0.011	0.015	0.065
Q032	3	0.057	0.012	0.017	0.086
Q033	2	0.020	0.002	0.004	0.029
Q034	3	0.047	0.034	0.047	0.129
Q035	3	0.051	0.018	0.025	0.094
Q036	2	0.056	0.016	0.027	0.115
Q037	2	0.069	0.017	0.029	0.131
Q040	3	0.023	0.003	0.005	0.031
Q042	3	0.139	0.013	0.018	0.170
Q043	3	0.020	0.002	0.003	0.025
Q046	3	0.842	0.023	0.032	0.898

CASE ----- RUN SERIES 12, LOG 12.1

GIMBAL PATTERN --- 4AA MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE 7.5 DEGREES INBOARD (ENGINE NUMBER 4)
 ON THE CENTER NOZZLE HEATING RATES

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
RTU/SQ-FT-SEC					
K002	2	143.116	6.391	11.297	7.998
K004	5	5.900	0.459	0.545	0.244
K005	5	2.346	0.293	0.348	0.156
K006	5	1.592	0.205	0.244	0.109
K007	5	0.998	0.207	0.246	0.110
K009	6	0.797	0.233	0.268	0.109
L003	6	4.572	0.458	0.527	0.215
L004	6	2.034	0.176	0.203	0.083
L005	6	1.366	0.128	0.148	0.060
L006	6	1.297	0.101	0.116	0.047
L007	6	1.447	0.144	0.165	0.067
L008	6	1.522	0.194	0.223	0.091
M001	5	8.722	1.007	1.196	0.535
M006	6	1.144	0.124	0.143	0.058
M007	6	0.713	0.095	0.109	0.045
M008	6	0.923	0.186	0.214	0.087
M009	6	0.732	0.104	0.119	0.049
					167.080
					6.632
					2.813
					1.919
					1.328
					1.125
					5.218
					2.282
					1.547
					1.439
					1.649
					1.796
					10.326
					1.319
					0.847
					1.195
					0.878

CASE ----- RUN SERIES 12, LCG 12.1A

GIMBAL PATTERN --- 4AA MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE 7.5 DEGREES INBOARD (ENGINE NUMBER 4)
ON THE HEAT SHIELD AND CENTER ENGINE NOZZLE HEATING RATES

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3 (ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
K001	3	64.233	2.901	3.997	2.307
K003	3	11.733	0.602	0.829	0.479
K004	3	4.187	0.217	0.299	0.173
L001	3	317.666	7.591	10.459	6.039
L002	3	146.200	6.540	9.011	5.203
L003	3	44.500	2.393	3.297	1.903
L004	3	13.433	0.263	0.362	0.209
M003	2	25.750	1.650	2.917	2.063
M004	3	9.183	0.528	0.728	0.420
Q002	3	3.833	0.398	0.549	0.317
Q003	3	10.037	0.520	0.717	0.414
Q004	3	9.497	0.423	0.583	0.336
Q008	3	10.667	0.411	0.566	0.327
Q009	3	14.500	1.178	1.623	0.937
Q010	3	26.067	1.087	1.498	0.865
Q011	3	13.500	0.942	1.297	0.749
Q014	3	7.903	0.806	1.110	0.641
Q015	3	8.507	2.615	3.603	2.080
Q016	2	6.765	0.885	1.564	1.106
Q017	2	2.665	0.145	0.256	0.181
Q019	2	2.810	0.450	0.795	0.562
					71.156
					13.170
					4.705
					335.782
					161.808
					50.210
					14.060
					31.938
					10.444
					4.784
					11.278
					10.506
					11.647
					17.310
					28.662
					15.747
					9.826
					14.747
					10.084
					3.209
					4.497

CASE ----- RUN SERIES 12, LOG 12.2

GIMBAL PATTERN --- 4AA MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SAME AS SERIES 12.1 EXCEPT THE INSTRUMENTATION IS SWITCHED TO THE HEAT SHIELD AND THRUST CONE

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
RTU/SQ-FT-SEC					
Q001	6	2.036	0.202	0.233	2.321
Q002	6	3.443	0.213	0.246	3.743
Q003	5	6.494	0.860	0.990	7.706
Q004	6	7.921	0.479	0.551	8.596
Q008	5	9.862	0.852	1.012	11.219
Q009	5	11.907	0.677	0.805	12.987
Q010	6	19.728	1.630	1.875	22.024
Q011	5	6.767	0.846	0.973	7.958
Q013	6	2.399	0.337	0.387	2.873
Q014	6	6.093	0.814	0.936	7.239
Q015	6	6.172	0.818	0.940	7.324
Q016	6	6.070	0.427	0.491	6.672
Q017	6	2.465	0.222	0.255	2.777
Q019	6	2.685	0.334	0.384	3.155
Q022	6	0.011	0.004	0.004	0.016
Q023	6	0.042	0.004	0.005	0.048
Q024	6	0.061	0.005	0.006	0.069
Q025	6	0.110	0.008	0.009	0.121
Q031	5	0.020	0.003	0.004	0.025
Q052	6	1.500	0.283	0.326	1.899

CASE ----- RUN SERIES 12, LOG 12.3

GIMBAL PATTERN --- 4A8 MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SIMULATED DUAL ACTUATOR FAILURE INBOARD ON ENGINE NUMBER 1

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
RTU/SQ-FT-SEC					
M001	2	5.462	0.034	0.060	0.043
M006	3	0.846	0.049	0.067	0.039
M008	3	0.820	0.030	0.042	0.024
Q001	3	3.084	0.148	0.204	0.118
Q002	3	3.364	0.029	0.040	0.023
Q003	3	6.594	0.726	1.000	0.577
Q004	3	5.520	0.545	0.751	0.434
Q007	3	0.440	0.024	0.034	0.019
Q008	3	4.165	0.502	0.692	0.399
Q009	3	5.171	0.498	0.686	0.396
Q010	2	1.195	0.501	0.885	0.626
Q011	1	0.784	0.0	0.0	0.0
Q013	3	1.753	0.178	0.246	0.142
Q014	3	1.799	0.090	0.123	0.071
Q015	3	1.254	0.268	0.370	0.213
Q016	3	1.658	0.215	0.296	0.171
Q017	3	2.904	0.336	0.463	0.267
Q019	3	2.592	0.377	0.520	0.300
Q022	3	0.009	0.002	0.003	0.002
Q023	3	0.036	0.002	0.002	0.001
Q024	3	0.059	0.007	0.009	0.005
Q025	3	0.108	0.002	0.003	0.002
Q031	3	0.026	0.003	0.004	0.002
Q052	3	3.913	0.463	0.638	0.368

CASE ----- RUN SERIES 13, LOG 13.1.1

GIMBAL PATTERN --- 7 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE AT 5 DEGREES ON NO 4 ENGINE ON CENTER
 ENGINE NOZZLE ENVIRONMENT

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL	UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
BTU/SQ-FT-SEC						
K001	5	39.440	7.858	9.335	4.175	51.964
K002	2	2.990	0.880	1.556	1.100	6.290
K003	4	6.120	0.569	0.711	0.356	7.187
K004	4	2.522	0.129	0.162	0.081	2.765
L001	4	10.110	1.543	1.930	0.965	13.005
L002	4	9.435	1.562	1.954	0.977	12.366
L003	5	5.476	0.792	0.941	0.421	6.739
L004	4	3.932	0.114	0.142	0.071	4.146
M001	3	6.100	0.347	0.478	0.276	6.928
M003	4	3.655	0.148	0.186	0.093	3.933
M004	4	2.710	0.164	0.205	0.102	3.017
Q002	3	3.107	0.189	0.261	0.151	3.558
Q003	3	4.597	0.168	0.231	0.133	4.997
Q004	4	4.835	0.351	0.440	0.220	5.494
Q008	3	9.560	1.645	2.267	1.309	13.486
Q009	4	8.725	0.583	0.729	0.365	9.819
Q010	4	6.960	0.367	0.459	0.229	7.648
Q011	4	6.915	0.207	0.259	0.130	7.304
Q014	4	17.375	2.055	2.570	1.285	21.231
Q015	3	16.667	0.602	0.829	0.479	18.103
Q016	4	7.015	0.339	0.424	0.212	7.652
Q019	3	6.247	0.431	0.594	0.343	7.276

CASE ----- RUN SERIES 13, LOG 13.1.1A

GIMBAL PATTERN --- 7 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE AT 5 DEGRFFS ON NO 4 ENGINE ON CENTER
 ENGINE NOZZLE ENVIRONMENT

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
K001	4	17.175	4.671	5.843	2.921
K003	4	5.890	0.653	0.816	0.408
K004	4	3.250	0.141	0.176	0.088
L001	4	40.650	7.030	8.794	4.397
L002	4	21.375	2.230	2.789	1.395
L003	4	7.707	0.567	0.710	0.355
L004	4	3.905	0.441	0.552	0.276
M003	4	5.950	0.567	0.709	0.354
M004	4	2.775	0.132	0.165	0.082
Q002	3	3.233	0.212	0.293	0.169
Q003	4	4.777	0.103	0.128	0.064
Q004	3	5.633	0.151	0.208	0.120
Q008	4	10.280	0.782	0.979	0.489
Q009	4	11.375	0.228	0.285	0.143
Q010	3	8.673	0.659	0.908	0.524
Q011	4	7.902	0.607	0.760	0.380
Q014	3	22.233	1.302	1.794	1.036
Q015	4	20.975	0.665	0.832	0.416
Q016	4	7.457	0.342	0.427	0.214
Q019	4	6.957	0.562	0.703	0.351
					25.939
					7.115
					3.514
					53.841
					25.559
					8.772
					4.733
					7.013
					3.022
					3.740
					4.970
					5.994
					11.748
					11.803
					10.246
					9.042
					25.341
					22.223
					8.099
					8.012

CASE ----- RUN SERIES 14, LOG 14.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 630.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE ENGINE COMPONENT ENVIRONMENT

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3 (ST DEV MEAN)
			SMPL	UNIV	
RTU/SQ-FT-SEC					
Q001	7	1.063	0.225	0.253	1.350
Q002	7	1.921	0.503	0.566	2.563
Q003	9	3.449	0.987	1.080	4.528
Q004	9	5.154	0.606	0.663	5.817
Q008	4	2.080	0.326	0.407	2.691
Q022	5	0.011	0.001	0.001	0.013
Q023	7	0.050	0.012	0.014	0.065
Q024	8	0.079	0.014	0.015	0.095
Q025	6	0.165	0.018	0.021	0.191
Q033	1	0.013	0.0	0.0	0.013
Q046	7	0.502	0.106	0.119	0.637
Q052	3	1.637	0.176	0.243	2.057
Q070	3	0.212	0.042	0.057	0.311
Q071	3	0.059	0.008	0.011	0.079
Q072	3	0.033	0.008	0.011	0.052
Q080	2	0.163	0.015	0.027	0.219
Q081	3	0.176	0.006	0.008	0.190
Q082	3	0.122	0.023	0.032	0.177
Q090	2	0.049	0.011	0.019	0.089
Q091	3	0.086	0.003	0.004	0.094
Q092	3	0.067	0.004	0.006	0.077
Q100	3	0.074	0.011	0.015	0.101
Q101	3	0.077	0.011	0.016	0.104
Q102	3	0.043	0.010	0.014	0.068

CASE ----- RUN SERIES 14, LOG 14.1.1A

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE ENGINE COMPONENT ENVIRONMENT. ENGINE RING GAGES ON NO 3
ENGINE TO COMPARE WITH THOSE ON NO 1 ENGINE

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
BTU/SQ/FT-SEC					
Q001	2	3.010	0.210	0.371	0.262
Q002	2	4.915	1.385	2.448	1.731
Q003	1	5.370	0.0	0.0	0.0
Q004	2	3.390	1.070	1.892	1.337
Q015	2	3.370	0.170	0.300	0.212
Q022	2	0.006	0.002	0.003	0.002
Q023	2	0.056	0.007	0.012	0.009
Q024T	2	0.075	0.001	0.001	0.001
Q024R	2	0.020	0.003	0.006	0.004
Q025	2	0.173	0.021	0.037	0.026
Q038	2	0.006	0.002	0.003	0.002
Q040	2	0.033	0.004	0.007	0.005
Q041	2	0.009	0.001	0.001	0.001
Q052	2	2.035	0.605	1.069	0.756
Q053	2	0.473	0.018	0.032	0.022
Q054	2	0.579	0.025	0.044	0.031
Q055	2	0.436	0.074	0.130	0.092
Q070	2	0.102	0.005	0.009	0.007
Q080	2	0.137	0.0	0.0	0.0
Q090	2	0.047	0.003	0.005	0.003

Q001	2	3.010	0.210	0.371	0.262	3.797
Q002	2	4.915	1.385	2.448	1.731	10.109
Q003	1	5.370	0.0	0.0	0.0	5.370
Q004	2	3.390	1.070	1.892	1.337	7.402
Q015	2	3.370	0.170	0.300	0.212	4.007
Q022	2	0.006	0.002	0.003	0.002	0.013
Q023	2	0.056	0.007	0.012	0.009	0.082
Q024T	2	0.075	0.001	0.001	0.001	0.077
Q024R	2	0.020	0.003	0.006	0.004	0.032
Q025	2	0.173	0.021	0.037	0.026	0.252
Q038	2	0.006	0.002	0.003	0.002	0.013
Q040	2	0.033	0.004	0.007	0.005	0.049
Q041	2	0.009	0.001	0.001	0.001	0.011
Q052	2	2.035	0.605	1.069	0.756	4.304
Q053	2	0.473	0.018	0.032	0.022	0.540
Q054	2	0.579	0.025	0.044	0.031	0.673
Q055	2	0.436	0.074	0.130	0.092	0.712
Q070	2	0.102	0.005	0.009	0.007	0.121
Q080	2	0.137	0.0	0.0	0.0	0.137
Q090	2	0.047	0.003	0.005	0.003	0.057

CASE ----- RUN SERIES 14, LOG 14.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- ON

REMARKS: TO DETERMINE J-2 ENGINE COMPONENT ENVIRONMENT

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	9	1.124	0.285	0.312	0.104
Q002	9	2.087	0.427	0.467	0.156
Q003	9	3.583	0.704	0.770	0.257
Q004	9	5.684	0.422	0.462	0.154
Q008	7	2.379	0.378	0.425	0.161
Q020	7	0.031	0.017	0.019	0.007
Q022	7	0.452	0.166	0.187	0.071
Q023	7	1.647	0.125	0.141	0.053
Q024	6	0.541	0.268	0.309	0.126
Q025	6	0.257	0.066	0.076	0.031
Q046	9	0.857	0.079	0.087	0.029
Q052	7	2.101	0.203	0.228	0.086
Q070	3	0.167	0.090	0.124	0.072
Q071	3	0.160	0.011	0.016	0.009
Q072	3	0.198	0.111	0.153	0.088
Q080	3	0.166	0.017	0.023	0.013
Q081	2	0.234	0.001	0.002	0.001
Q082	3	0.828	0.135	0.186	0.108
Q090	3	0.493	0.109	0.150	0.087
Q091	3	1.036	0.206	0.284	0.164
Q092	3	0.980	0.085	0.117	0.068
Q101	3	0.224	0.095	0.130	0.075
Q102	3	0.278	0.109	0.150	0.087
					1.435
					2.554
					4.353
					6.146
					2.860
					0.052
					0.664
					1.807
					0.920
					0.349
					0.943
					2.360
					0.382
					0.187
					0.463
					0.206
					0.238
					1.151
					0.753
					1.528
					1.183
					0.450
					0.539

CASE ----- RUN SERIES 14, LOG 14.3

GIMBAL PATTERN --- 3B MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: J-2 ENGINE COMPONENT ENVIRONMENT WITH 7.5 DEGREE SINGLE ACTUATOR FAIL.
 ON ENGINE NO 1. Q70-72,Q80-82,Q90-92,Q100-102 DOUBTFUL BECAUSE OF FLOW INTERFERENCE

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	11	1.833	0.275	0.296	2.100
Q002	11	2.753	0.614	0.660	3.349
Q003	11	2.941	0.335	0.361	3.267
Q004	10	2.948	0.305	0.331	3.262
Q008	11	4.857	0.498	0.535	5.341
Q020	1	0.007	0.0	0.0	0.007
Q022	5	0.015	0.006	0.007	0.024
Q024	10	0.122	0.015	0.016	0.137
Q025	10	0.250	0.030	0.032	0.281
Q041	5	0.028	0.001	0.001	0.030
Q046	11	0.708	0.134	0.144	0.839
Q052	6	2.019	0.499	0.574	2.722
Q053	8	0.151	0.033	0.037	0.191
Q070	3	0.460	0.190	0.262	0.915
Q071	4	0.150	0.019	0.024	0.185
Q072	3	0.102	0.013	0.018	0.133
Q080	4	0.262	0.075	0.094	0.403
Q081	4	0.406	0.011	0.014	0.428
Q082	3	0.287	0.021	0.030	0.339
Q090	4	0.030	0.005	0.006	0.039
Q091	4	0.082	0.005	0.007	0.092
Q092	3	0.103	0.004	0.006	0.112
Q101	4	0.153	0.006	0.007	0.164
Q102	3	0.100	0.009	0.013	0.122

CASE ----- RUN SERIES 14, LOG 14.4

GIMBAL PATTERN --- 3B MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- ON

REMARKS: ENGINE COMPONENT ENVIRONMENT WITH SINGLE ACTUATOR FAILURE ON NUMBER ONE
 ENGINE AT 7.5 DEGREES OUTBOARD

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	11	1.675	0.231	0.248	1.899
Q002	11	2.505	0.225	0.242	2.723
Q003	10	2.854	0.329	0.357	3.192
Q004	10	3.168	0.392	0.425	3.571
Q008	10	5.126	0.653	0.708	5.797
Q020	4	0.050	0.010	0.013	0.070
Q022	7	0.669	0.153	0.173	0.865
Q024	10	0.784	0.241	0.261	1.031
Q025	11	0.310	0.087	0.093	0.394
Q041	3	0.117	0.016	0.018	0.135
Q046	10	1.287	0.147	0.159	1.438
Q052	3	2.343	0.224	0.309	2.878
Q053	6	0.568	0.175	0.201	0.815

CASE ----- RUN SERIES 15, LOG 15.3.1

GIMRAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: DETERMINATION OF THRUST STRUCTURE HEATING RATES
 INTERSTAGE GAGES AT 0 DEGREES . ALSO SEE LOG 15.3.2

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(1ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC (P) IN PSIA

P015	3	0.030	0.001	0.002	0.001	0.033
P017	3	0.024	0.000	0.000	0.000	0.025
Q004	3	5.378	0.365	0.503	0.290	6.248
Q020	2	0.054	0.004	0.007	0.005	0.069
Q021	3	0.252	0.067	0.093	0.054	0.413
Q022	3	0.162	0.093	0.128	0.074	0.385
Q023	2	2.098	0.238	0.421	0.297	2.990
Q024	3	1.131	0.322	0.444	0.257	1.901
Q025	3	0.458	0.122	0.168	0.097	0.748
Q026	2	0.285	0.075	0.133	0.094	0.566
Q027	2	4.520	0.260	0.460	0.325	5.495
Q028	3	7.873	0.607	0.837	0.483	9.322
Q029	1	0.093	0.0	0.0	0.0	0.093
Q030	2	0.136	0.043	0.076	0.054	0.298
Q031	3	0.689	0.012	0.017	0.010	0.718
Q032	3	0.364	0.123	0.169	0.098	0.657
Q036	3	1.651	0.192	0.265	0.153	2.110
Q037	3	0.270	0.064	0.088	0.051	0.423
Q040	3	0.626	0.210	0.289	0.167	1.126
Q043	3	0.158	0.044	0.060	0.035	0.262
Q044	3	0.276	0.085	0.117	0.067	0.479
Q046	3	1.089	0.014	0.019	0.011	1.121

CASE ----- RUN SERIES 15, LOG 15.3.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC. ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: DETERMINATION OF THRUST STRUCTURE HEATING RATES
 INTERSTAGE GAGES AT 45 DEGREES. ALSO SEE RUN SERIES 15.3.1

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	(Q) IN BTU/SQ-FT-SFC		(P) IN PSIA		SAMPLE MEAN + 3(1ST DEV MEAN)
			SMPL	UNIV	MEAN	DEV	
P015	2	0.028	0.001	0.002	0.001	0.031	0.031
P017	2	0.024	0.000	0.000	0.000	0.025	0.025
Q002	2	4.935	0.425	0.751	0.531	6.529	6.529
Q003	2	6.025	0.665	1.176	0.831	8.519	8.519
Q004	4	6.640	0.301	0.376	0.188	7.204	7.204
Q020	4	0.086	0.026	0.033	0.016	0.135	0.135
Q021	4	0.338	0.047	0.059	0.030	0.427	0.427
Q022	2	0.083	0.002	0.002	0.001	0.088	0.088
Q023	4	1.755	0.602	0.754	0.377	2.886	2.886
Q024	3	1.177	0.332	0.457	0.264	1.969	1.969
Q025	3	0.521	0.140	0.193	0.111	0.855	0.855
Q026	4	0.114	0.030	0.037	0.019	0.169	0.169
Q027	4	0.612	0.032	0.040	0.020	0.672	0.672
Q028	4	0.814	0.104	0.130	0.065	1.009	1.009
Q029	4	0.185	0.024	0.030	0.015	0.230	0.230
Q030	3	0.292	0.138	0.259	0.150	0.740	0.740
Q031	4	0.662	0.184	0.230	0.115	1.007	1.007
Q032	4	0.420	0.167	0.209	0.104	0.734	0.734
Q036	4	1.714	0.460	0.575	0.288	2.576	2.576
Q037	4	0.335	0.133	0.166	0.083	0.584	0.584
Q040	4	0.482	0.074	0.092	0.046	0.621	0.621
Q043	4	0.121	0.017	0.021	0.010	0.152	0.152
Q044	4	0.173	0.075	0.094	0.047	0.313	0.313
Q046	1	0.910	0.0	0.0	0.0	0.910	0.910

CASE ----- RUN SERIES 15, LOG 15.3.2

GIMRAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: DETERMINATION OF THRUST STRUCTURE HEATING RATES
INTERSTAGE GAGES AT 45 DEGREES. ALSO SEE RUN SERIES 15.3.1

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN RTU/SQ-FT-SEC (P) IN PSIA					
0054	3	0.910	0.053	0.073	0.042
					1.036

CASE ----- RUN SERIES 16 , LOG 16.1

GIMBAL PATTENP --- 3R MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECTS OF SINGLE ACTUATOR FAILURE OUTBOARD ON THRUST STRUCTURE WITH INTERSTAGE. INTERSTAGE GAGES 26-29 AT 0 DEGREES AZIMUTH

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
RTU/SQ-FT-SEC					
Q004	3	4.737	0.406	0.560	5.706
Q020	3	0.031	0.007	0.009	0.047
Q021	3	0.329	0.009	0.012	0.351
Q022	3	0.190	0.018	0.025	0.233
Q023	2	1.940	0.020	0.035	2.015
Q024	3	1.019	0.076	0.104	1.200
Q025	3	0.478	0.093	0.129	0.701
Q026	3	0.306	0.046	0.064	0.416
Q027	3	3.583	0.314	0.432	4.332
Q028	3	5.483	0.908	1.251	7.650
Q029	1	0.424	0.0	0.0	0.424
Q030	3	0.120	0.004	0.005	0.129
Q031	3	0.696	0.082	0.113	0.892
Q032	2	0.536	0.026	0.046	0.634
Q036	3	0.159	0.037	0.051	0.248
Q037	3	0.186	0.049	0.067	0.302
Q038	2	0.501	0.050	0.088	0.687
Q040	3	1.155	0.031	0.042	1.229
Q043	3	0.065	0.020	0.028	0.114
Q044	3	0.345	0.045	0.062	0.453
Q046	2	1.105	0.015	0.027	1.161
Q054	2	0.593	0.065	0.115	0.837

CASE ----- RUN SERIES 16, LOG 16.3.1

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE INBOARD ON THRUST STRUCTURE HEATING
 RATES WITH INTERSTAGE ON. INTERSTAGE GAGES Q26,27,28 AT 0 DEGREES AZIMUTH

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLF MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q004	3	7.873	0.681	0.938	9.497
Q020	3	0.127	0.054	0.075	0.257
Q021	3	0.356	0.065	0.089	0.511
Q022	2	0.211	0.145	0.256	0.755
Q023	3	2.117	0.363	0.500	2.982
Q024	3	0.676	0.202	0.278	1.158
Q024R	2	0.017	0.001	0.002	0.021
Q025	3	0.370	0.064	0.088	0.522
Q026	3	0.197	0.011	0.016	0.224
Q027	3	3.437	0.397	0.547	4.385
Q028	3	6.967	0.528	0.727	8.226
Q029	3	0.307	0.131	0.181	0.620
Q030	3	0.527	0.109	0.151	0.788
Q031	3	0.826	0.054	0.075	0.955
Q032	3	0.355	0.163	0.224	0.744
Q036	3	0.944	0.094	0.129	1.167
Q037	3	0.226	0.026	0.035	0.287
Q038	3	0.428	0.048	0.067	0.544
Q040	2	0.945	0.165	0.292	1.564
Q041	3	0.150	0.042	0.058	0.251
Q044	3	0.316	0.024	0.033	0.374
Q054	3	1.214	0.059	0.081	1.353

CASE ----- RUN SERIES 18, LOG 18.1

GIMBAL PATTERPN --- 8 MIXTURE RATIO ----- 5.00
 NOMINAL PC. ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE DEFLECTIONS WITH 1.13 DEGREE PITCH OR YAW

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	4	3.085	0.349	0.437	0.219
Q002	7	4.684	0.591	0.665	0.251
Q003	7	7.041	0.465	0.523	0.198
Q004	6	6.330	0.414	0.476	0.194
Q006	1	4.060	0.0	0.0	0.0
Q008	7	6.019	0.838	0.943	0.356
Q009	7	5.413	0.428	0.481	0.182
Q010	6	3.090	0.116	0.133	0.054
Q011	7	2.801	0.243	0.273	0.103
Q013	7	2.566	0.233	0.263	0.099
Q014	6	1.917	0.290	0.334	0.136
Q015	7	2.650	0.378	0.426	0.161
Q016	7	1.984	0.146	0.164	0.062
Q017	6	1.205	0.212	0.243	0.099
Q019	6	2.712	0.295	0.339	0.138
Q023	7	0.054	0.010	0.011	0.004
Q024	7	0.071	0.009	0.010	0.004
Q025	7	0.159	0.022	0.025	0.010
Q031	4	0.041	0.004	0.005	0.002
Q048	3	0.043	0.006	0.008	0.005
Q044	6	0.113	0.013	0.015	0.006
Q046	6	0.370	0.077	0.089	0.036
Q052	4	2.487	0.280	0.350	0.175
Q054	6	0.767	0.117	0.134	0.055
					3.741
					5.438
					7.635
					6.913
					4.060
					7.088
					5.959
					3.253
					3.111
					2.864
					2.326
					3.133
					2.171
					1.503
					3.127
					0.067
					0.083
					0.187
					0.048
					0.058
					0.131
					0.479
					3.013
					0.932

CASE ----- RUN SERIES 19, LOG 19.1

GIMBAL PATTERN --- 9 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREE PITCH OR YAW DEFLECTION

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	6	3.347	0.382	0.440	0.179
Q002	6	6.120	0.657	0.755	0.308
Q003	5	7.988	0.231	0.274	0.122
Q004	5	7.112	0.298	0.354	0.158
Q004R	6	0.042	0.004	0.004	0.002
Q006	6	7.037	0.517	0.594	0.243
Q008	5	7.834	0.390	0.463	0.207
Q009	6	6.037	0.315	0.362	0.148
Q010	6	3.560	0.450	0.518	0.211
Q011	6	2.573	0.277	0.318	0.130
Q013	6	3.065	0.246	0.283	0.116
Q014	5	1.708	0.191	0.227	0.101
Q015	4	3.977	0.456	0.570	0.285
Q016	6	2.385	0.176	0.203	0.083
Q017	6	2.070	0.169	0.194	0.079
Q019	6	2.453	0.281	0.323	0.132
Q023	6	0.063	0.006	0.007	0.003
Q024	6	0.083	0.006	0.007	0.003
Q025	6	0.180	0.014	0.016	0.007
Q044	5	0.096	0.008	0.009	0.004
Q046	5	0.371	0.081	0.096	0.043
Q054	4	0.717	0.151	0.189	0.094
Q110	2	0.279	0.003	0.005	0.004
					3.885
					7.045
					8.355
					7.587
					0.047
					7.765
					8.456
					6.480
					4.194
					2.963
					3.412
					2.012
					4.832
					2.633
					2.308
					2.849
					0.071
					0.092
					0.200
					0.108
					0.500
					1.000
					0.290

CASE ----- RUN SERIES 19, LOG 19.2

GIMRAL PATTERN --- 9A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	6	3.223	0.176	0.202	0.083
Q002	6	5.328	0.167	0.193	0.079
Q003	6	6.888	0.139	0.160	0.065
Q004	6	6.638	0.553	0.637	0.260
Q004R	6	0.041	0.002	0.002	0.001
Q006	6	5.495	0.244	0.281	0.115
Q008	6	7.215	0.633	0.728	0.297
Q009	6	6.802	0.717	0.824	0.337
Q010	6	2.843	0.176	0.202	0.083
Q011	6	2.447	0.219	0.252	0.103
Q013	6	2.225	0.118	0.135	0.055
Q014	6	1.698	0.180	0.208	0.085
Q015	6	3.833	0.354	0.407	0.166
Q016	5	2.252	0.067	0.079	0.035
Q017	5	1.872	0.145	0.172	0.077
Q019	6	2.868	0.326	0.375	0.153
Q023	6	0.046	0.018	0.021	0.008
Q024	6	0.059	0.023	0.026	0.011
Q025	6	0.122	0.054	0.062	0.025
Q044	6	0.117	0.020	0.022	0.009
Q046	6	0.265	0.032	0.037	0.015
Q111A	2	0.151	0.033	0.058	0.041
Q112A	2	0.072	0.008	0.013	0.009
Q120A	2	0.073	0.021	0.038	0.027
					3.471
					5.564
					7.085
					7.418
					0.043
					5.839
					8.107
					7.811
					3.091
					2.756
					2.391
					1.952
					4.332
					2.358
					2.103
					3.328
					0.072
					0.091
					0.199
					0.145
					0.311
					0.275
					0.101
					0.154

CASE ----- RUN SERIES 19, LOG 19.2.2A & AB

GIMRAL PATTERN --- 9B MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW DEFLECTIONS
 RUNS 536-541 LOG A AND RUNS 548-550 LOG AB
 ALSO SEE LOG 19.2.2R

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)	
			SMPL	UNIV		
RTU/SQ-FT-SEC						
Q002	9	5.417	0.710	0.777	0.259	6.194
Q003	9	8.764	0.783	0.856	0.285	9.621
Q009	9	6.537	0.656	0.718	0.239	7.254
Q010	8	2.915	0.584	0.647	0.229	3.601
Q013	9	3.829	0.478	0.522	0.174	4.351
Q014	8	3.394	0.490	0.543	0.192	3.969
Q016	8	2.776	0.233	0.258	0.091	3.050
Q017	7	2.076	0.309	0.347	0.131	2.470
Q023	3	1.480	0.553	0.762	0.440	2.800
Q024	2	1.060	0.080	0.141	0.100	1.360
Q025	3	0.408	0.131	0.181	0.104	0.721
Q026	4	0.154	0.032	0.040	0.020	0.213
Q027	3	1.177	0.154	0.212	0.122	1.543
Q028	4	1.310	0.165	0.206	0.103	1.619
Q029	5	0.170	0.015	0.018	0.008	0.194
Q031	2	0.927	0.252	0.446	0.316	1.874
Q032	6	0.388	0.191	0.219	0.090	0.657
Q040	5	0.858	0.328	0.389	0.174	1.380
Q054	3	0.687	0.101	0.140	0.081	0.929
Q110R	5	1.248	0.257	0.306	0.137	1.658
Q111R	2	0.910	0.060	0.106	0.075	1.135
Q112R	2	0.840	0.249	0.441	0.312	1.776

CASE ----- RUN SERIES 19, LOG 19.2.2R

GIMBAL PATTERN --- 9R MIXTURE RATIO ---- 5.50
 NOMINAL PC----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: NOMINAL STEADY STATE DEFLECTION WITH 0.8 DEGREES PITCH OR YAW
 ALSO SEE LOG 19.2.2A & 4R

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
RTU/SQ-FT-SEC					
Q001	7	3.376	0.646	0.727	0.275
Q004	7	7.576	0.844	0.949	0.359
Q006	7	7.024	0.257	0.289	0.109
Q007	3	2.870	0.638	0.879	0.508
Q008	7	6.504	0.859	0.967	0.365
Q011	6	3.813	0.526	0.605	0.247
Q015	7	3.694	0.437	0.492	0.186
Q019	7	2.400	0.271	0.305	0.115
Q020	6	0.055	0.029	0.033	0.013
Q021	5	0.108	0.042	0.050	0.023
Q022	6	0.211	0.053	0.061	0.025
Q030	6	0.545	0.193	0.222	0.090
Q033	2	0.232	0.007	0.011	0.008
Q034	7	0.250	0.050	0.057	0.021
Q035	7	1.190	0.239	0.269	0.102
Q036	6	1.272	0.269	0.309	0.126
Q037	7	0.265	0.125	0.141	0.053
Q038	2	0.430	0.090	0.159	0.112
Q040	2	1.220	0.020	0.035	0.025
Q041	3	0.156	0.033	0.045	0.026
Q043	3	0.292	0.069	0.094	0.055
Q052	2	4.315	0.815	1.441	1.019
					4.700
					8.652
					7.352
					4.393
					7.600
					4.555
					4.252
					2.745
					0.095
					0.176
					0.285
					0.816
					0.257
					0.314
					1.495
					1.651
					0.424
					0.767
					1.295
					0.233
					0.455
					7.371

CASE ----- RUN SERIES 19, LOG 19.2.3A

GIMRAL PATTERN --- 98 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW
 ALSO SEE LOG 19.2.3B

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)
			SMPL	UNIV	
RTU/SQ-FT-SEC					
Q002	6	5.708	1.878	2.160	8.354
Q003	5	8.628	0.929	1.103	10.108
Q009	5	6.918	0.808	0.960	8.205
Q010	5	2.594	0.138	0.164	2.814
Q013	5	3.764	0.702	0.833	4.882
Q014	6	3.805	0.712	0.818	4.807
Q016	6	2.465	0.382	0.439	3.003
Q017	6	1.398	0.485	0.558	2.582
Q023	6	0.068	0.007	0.008	0.078
Q024	5	0.108	0.010	0.012	0.124
Q025	5	0.210	0.006	0.008	0.221
Q031	6	0.037	0.003	0.003	0.041
Q032	6	0.059	0.004	0.005	0.065
Q054	6	0.665	0.090	0.103	0.792
Q120H	1	0.142	0.0	0.0	0.142
Q121H	2	0.095	0.010	0.018	0.133
Q122H	2	0.031	0.016	0.029	0.093

CASE ----- RUN SERIES 19, LOG 19.2.3P

GIMBAL PATTERN --- 98 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREE PITCH OR YAW DEFLECTIONS
 ALSO SEE LOG 19.2.3A

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3 (ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	6	3.115	0.380	0.427	0.178
Q004	5	6.814	0.334	0.397	0.178
Q006	6	7.022	0.452	0.520	0.212
Q007	6	2.715	0.501	0.577	0.235
Q008	4	6.215	1.256	1.571	0.786
Q011	6	4.063	0.537	0.618	0.252
Q015	6	3.425	0.535	0.615	0.251
Q019	6	2.127	0.334	0.384	0.157
Q020	4	0.004	0.001	0.001	0.000
Q022	5	0.018	0.004	0.005	0.002
Q030	6	0.022	0.005	0.005	0.002
Q033	5	0.013	0.002	0.003	0.001
Q034	5	0.032	0.006	0.007	0.003
Q035	6	0.077	0.007	0.008	0.003
Q036	6	0.097	0.008	0.010	0.004
Q037	6	0.111	0.005	0.006	0.002
Q040	6	0.034	0.013	0.015	0.006
Q041	6	0.032	0.001	0.002	0.001
Q043	6	0.020	0.003	0.003	0.001
Q052	6	3.427	0.778	0.895	0.365
					3.650
					7.347
					7.659
					3.421
					8.572
					4.820
					4.179
					2.597
					0.005
					0.026
					0.028
					0.017
					0.041
					0.087
					0.109
					0.118
					0.052
					0.034
					0.024
					4.523

CASE ----- RUN SERIES 19, LOG 19.3

GIMBAL PATTERN --- 98 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	4	2.885	0.344	0.430	0.215
Q002	6	4.927	1.028	1.182	0.483
Q003	6	7.455	1.048	1.205	0.492
Q004	6	6.945	0.479	0.551	0.225
Q004R	6	0.040	0.002	0.002	0.001
Q006	5	6.320	0.455	0.541	0.242
Q008	6	7.065	0.258	0.296	0.121
Q009	6	6.730	0.478	0.549	0.224
Q010	6	3.293	0.534	0.614	0.251
Q011	6	3.713	0.413	0.475	0.194
Q013	6	3.002	0.224	0.258	0.105
Q014	6	2.507	0.088	0.101	0.041
Q015	6	3.302	0.497	0.572	0.234
Q016	6	2.222	0.208	0.239	0.098
Q017	6	1.358	0.333	0.383	0.156
Q019	6	2.682	0.407	0.469	0.191
Q023	6	0.067	0.012	0.014	0.006
Q024	5	0.082	0.003	0.003	0.001
Q025	5	0.171	0.003	0.004	0.002
Q044	6	0.101	0.043	0.050	0.020
Q046	6	0.426	0.044	0.050	0.020
Q110B	2	0.254	0.018	0.033	0.023
Q111B	2	0.109	0.008	0.014	0.010
Q112B	2	0.071	0.001	0.002	0.001
					3.530
					6.375
					8.931
					7.620
					0.043
					7.045
					7.428
					7.403
					4.045
					4.295
					3.317
					2.630
					4.002
					2.515
					1.827
					3.256
					0.084
					0.086
					0.176
					0.162
					0.487
					0.324
					0.139
					0.075

CASE ----- RUN SERIES 20, LOG 20.1.1 AND LOG 20.1.2

GIMBAL PATTERN --- 28 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES
NUMBER 3 ENGINE OUT
LOG 20.1.1 RUNS 551-558, LOG 20.1.2 RUNS 571-576

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q001	6	3.687	0.847	0.974	0.398
Q002	7	4.599	0.494	0.556	0.210
Q003	8	5.167	0.518	0.573	0.203
Q004	6	3.882	0.787	0.905	0.369
Q006	6	4.280	0.614	0.706	0.288
Q008	5	7.620	0.659	0.783	0.350
Q009	8	8.512	0.521	0.577	0.204
Q010	4	4.835	0.951	1.190	0.595
Q011	5	1.528	0.470	0.559	0.250
Q013	8	4.309	1.428	1.581	0.559
Q014	7	2.969	0.475	0.535	0.202
Q015	5	9.318	1.897	2.254	1.008
Q016	7	2.883	0.768	0.864	0.326
Q017	7	2.700	0.124	0.140	0.053
Q019	6	7.612	0.200	0.231	0.094
Q020	6	0.001	0.001	0.001	0.000
Q021	6	0.001	0.000	0.000	0.000
Q022	5	0.013	0.008	0.009	0.004
Q023	6	0.066	0.019	0.022	0.009
Q024	8	0.109	0.024	0.026	0.009
Q025	8	0.238	0.047	0.052	0.018
Q030	5	0.021	0.004	0.005	0.002
Q031	7	0.041	0.010	0.011	0.004
Q032	7	0.076	0.009	0.010	0.004
					4.880
					5.229
					5.776
					4.990
					5.144
					8.670
					9.124
					6.620
					2.277
					5.986
					3.575
					12.342
					3.862
					2.858
					7.894
					0.002
					0.001
					0.026
					0.093
					0.137
					0.293
					0.027
					0.054
					0.088

CASE ----- RUN SERIES 20, LOG 20.1.1 AND LOG 20.1.2

GIMBAL PATTERN --- 2R MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES
 NUMBER 3 ENGINE OUT
 LOG 20.1.1 RUNS 551-558, LOG 20.1.2 RUNS 571-576

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q034	5	0.042	0.010	0.012	0.005
Q035	6	0.115	0.015	0.017	0.007
Q038	6	0.001	0.000	0.000	0.000
Q044	7	0.163	0.020	0.022	0.008
Q110A	2	0.226	0.014	0.024	0.017
Q111A	2	0.108	0.028	0.049	0.034
Q112A	2	0.030	0.006	0.011	0.008
Q121A	1	0.098	0.0	0.0	0.0
Q122A	1	0.013	0.0	0.0	0.0
					0.058
					0.137
					0.001
					0.188
					0.277
					0.212
					0.055
					0.098
					0.013

CASE ----- RUN SERIES 20, LOG 20A.1.2

GIMBAL PATTERN --- 2B-MOD MIXTURE RATIO ---- 5.50
 NOMINAL PC----- 715.0 PSIA INTERSTAGE----- OFF

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES
 NUMBER 3 ENGINE OUT. MODIFIED GIMBAL PATTERN 2B IS THE SAME AS 2B EXCEPT THAT THE INOPERATIVE
 ENGINE IS ALSO GIMBALLED

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)
			SMPL	UNIV	
PTU/SQ-FT-SEC					
Q001	5	3.960	0.766	0.910	0.407
Q004	4	3.897	0.313	0.391	0.196
Q006	4	3.992	0.192	0.240	0.120
Q008	5	6.768	1.042	1.238	0.554
Q011	5	1.426	0.670	0.796	0.356
Q019	4	8.585	0.499	0.624	0.312
Q020	3	0.001	0.0	0.0	0.0
Q021	5	0.001	0.000	0.000	0.000
Q022	4	0.019	0.005	0.006	0.003
Q023	5	0.101	0.007	0.008	0.004
Q024	5	0.127	0.003	0.003	0.001
Q030	2	0.037	0.009	0.016	0.011
Q033	4	0.027	0.005	0.006	0.003
Q043	5	0.009	0.001	0.002	0.001
Q046	4	0.225	0.080	0.100	0.050
					5.181
					4.484
					4.353
					8.429
					2.493
					9.520
					0.001
					0.001
					0.029
					0.112
					0.131
					0.071
					0.037
					0.011
					0.011
					0.375

CASE ----- RUN SERIES 20, LOG 20.2.1 AND LOG 20.2.2

GIMBAL PATTERN --- 2R MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES
 NUMBER 3 ENGINE OUT AND INTERSTAGE ON. INTERSTAGE 'A' GAGES AT 29, 'B' GAGES AT 0 DEGREES
 LOG 20.2.1 RUNS 559-564, LOG 20.2.2 RUNS 565-570

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
RTU/SQ-FT-SEC					
Q001	6	3.782	0.509	0.586	0.239
Q002	5	5.290	1.971	2.341	1.047
Q003	6	4.398	0.700	0.805	0.329
Q004	6	3.937	0.279	0.321	0.131
Q006	6	4.417	0.427	0.491	0.201
Q008	5	8.338	0.448	0.533	0.238
Q009	6	7.778	0.502	0.577	0.236
Q010	5	4.744	1.059	1.258	0.563
Q015	6	10.303	1.296	1.490	0.608
Q017	6	2.790	0.405	0.466	0.190
Q019	4	8.180	0.291	0.363	0.182
Q020	5	0.026	0.006	0.007	0.003
Q021	5	0.024	0.008	0.010	0.004
Q022	6	0.116	0.036	0.041	0.017
Q023	6	1.433	0.226	0.259	0.106
Q024	4	2.057	0.458	0.574	0.287
Q025	6	0.703	0.127	0.146	0.060
Q030	5	0.082	0.017	0.020	0.009
Q031	5	1.260	0.338	0.402	0.180
Q032	6	1.238	0.397	0.456	0.186
Q044	5	0.350	0.116	0.138	0.061
Q110A	2	0.295	0.055	0.097	0.069
Q111A	2	0.310	0.020	0.035	0.025
Q112A	2	0.360	0.010	0.018	0.013
					4.499
					8.431
					5.385
					4.330
					5.018
					9.052
					8.485
					6.432
					12.129
					3.361
					8.725
					0.036
					0.037
					0.167
					1.751
					2.918
					0.883
					0.109
					1.799
					1.797
					0.534
					0.501
					0.385
					0.398

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 20, LOG 20.2.1 AND LOG 20.2.2

GIMBAL PATTERN --- 28 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES
 NUMBER 3 ENGINE OUT AND INTERSTAGE ON. INTERSTAGE 'A' GAGES AT 29, 'B' GAGES AT 0 DEGREES
 LOG 20.2.1 RUNS 559-564, LOG 20.2.2 RUNS 565-570

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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BTU/SQ-FT-SEC

Q120A	2	0.465	0.075	0.133	0.094	0.746
Q121A	2	1.390	0.060	0.106	0.075	1.615
Q122A	1	0.450	0.0	0.0	0.0	0.450
Q26A	5	0.122	0.034	0.041	0.018	0.177
Q26R	6	0.378	0.083	0.095	0.039	0.495
Q27A	6	0.862	0.280	0.322	0.132	1.256
Q27B	6	1.947	0.378	0.435	0.178	2.480
Q28A	3	0.567	0.163	0.225	0.130	0.957
Q28B	6	2.203	0.472	0.543	0.222	2.868
Q29B	4	0.897	0.115	0.144	0.072	1.113

CASE ----- RUN SERIES 21, LOG 21.1

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE INBOARD AT 3 DEGREES ON BASE REGION
HEATING RATES

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
BTU/SQ-FT-SEC					
Q001	5	5.958	0.984	1.169	0.523
Q002	5	8.702	1.180	1.402	0.627
Q003	5	8.752	1.077	1.279	0.572
Q004	6	7.265	0.688	0.791	0.323
Q006	5	6.164	0.444	0.528	0.236
Q008	6	11.583	0.684	0.787	0.321
Q009	5	9.854	0.744	0.883	0.395
Q010	5	2.146	0.677	0.805	0.360
Q011	6	2.953	0.163	0.187	0.076
Q013	5	4.986	0.355	0.421	0.188
Q014	6	3.768	0.633	0.728	0.297
Q015	5	6.562	0.491	0.584	0.261
Q016	1	2.490	0.0	0.0	0.0
Q017	4	2.687	0.345	0.432	0.216
Q019	6	3.160	0.212	0.244	0.100
					7.526
					10.583
					10.468
					8.234
					6.872
					12.547
					11.039
					3.226
					3.183
					5.551
					4.660
					7.345
					2.490
					3.335
					3.459

CASE ----- RUN SERIES 21, LOG 21.2

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
 NOMINAL PC. ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE INBOARD AT 3 DEGREES WITH INTERSTAGE

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3 (ST DEV MEAN)
			SMPL	UNIV	
RTU/SQ-FT-SEC					
Q001	7	5.289	0.642	0.723	0.273
Q002	7	8.253	0.534	0.601	0.227
Q003	6	8.530	1.233	1.418	0.579
Q004	6	7.027	0.960	1.104	0.451
Q006	6	7.240	0.612	0.704	0.287
Q008	7	11.264	1.038	1.168	0.441
Q009	6	9.340	1.079	1.241	0.507
Q010	5	2.734	0.573	0.680	0.304
Q011	7	3.243	0.810	0.911	0.344
Q013	6	5.548	1.618	1.861	0.760
Q014	7	3.677	1.027	1.156	0.437
Q015	7	7.120	1.463	1.646	0.622
Q016	4	3.130	0.322	0.403	0.201
Q017	7	2.740	0.444	0.500	0.189
Q019	7	3.650	0.613	0.690	0.261
					6.108
					8.934
					10.267
					8.379
					8.102
					12.589
					10.860
					3.647
					4.276
					7.827
					4.988
					8.987
					3.734
					3.307
					4.432

CASE ----- RUN SERIES 22, LOG 22.1

GIMBAL PATTERN --- 6B MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE OUTBOARD AT 3 DEGREES ON BASE REGION
 HEATING RATES. RUN 604 QUESTIONABLE DUE TO EARLY DIAPHRAGM BREAK AND EARLY BLAST WAVE RETURN

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)	
			SMPL	UNIV	MEAN	

BTU/SQ-FT-SEC

Q020	6	0.003	0.006	0.006	0.003	0.011
Q021	6	0.003	0.004	0.005	0.002	0.009
Q022	6	0.013	0.009	0.010	0.004	0.026
Q023	5	0.040	0.015	0.018	0.008	0.065
Q024	6	0.084	0.011	0.012	0.005	0.099
Q025	6	0.193	0.010	0.012	0.005	0.207
Q030	6	0.009	0.005	0.005	0.002	0.016
Q031	6	0.030	0.008	0.010	0.004	0.042
Q032	6	0.061	0.006	0.007	0.003	0.069
Q034	6	0.033	0.019	0.022	0.009	0.060
Q035	6	0.051	0.033	0.037	0.015	0.097
Q037	6	0.056	0.011	0.013	0.005	0.072
Q044	6	0.142	0.029	0.033	0.013	0.183
Q110	2	0.338	0.213	0.377	0.267	1.139
Q111	2	0.187	0.007	0.012	0.009	0.213
Q112	2	0.084	0.030	0.053	0.037	0.196

CASE ----- RUN SERIES 22, LOG 22.2

GIMBAL PATTERN --- 6R MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE OUTBOARD AT 3 DEGREES WITH INTERSTAGE
 ON, ON BASE REGION HEATING RATES

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
BTU/SQ-FT-SEC					
Q020	7	0.034	0.013	0.014	0.005
Q021	7	0.066	0.028	0.031	0.012
Q022	7	0.155	0.044	0.049	0.019
Q023	5	0.818	0.160	0.190	0.085
Q024	4	1.172	0.100	0.125	0.062
Q025	5	0.463	0.116	0.138	0.062
Q026	6	0.160	0.035	0.040	0.016
Q027	6	1.238	0.061	0.071	0.029
Q029	6	0.287	0.107	0.123	0.050
Q030	7	0.195	0.050	0.056	0.021
Q031	6	0.450	0.082	0.095	0.039
Q032	7	0.566	0.115	0.129	0.049
Q044	7	0.220	0.080	0.090	0.034
Q110	2	0.309	0.032	0.057	0.040
Q111	2	0.288	0.100	0.177	0.125
Q112	2	0.155	0.021	0.036	0.026

CASE ----- RUN SERIES 23, LOG 23.1.1

GIMBAL PATTERN --- 8 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE WALL ENVIRONMENT WITH ACTUATOR FAILURES INBOARD ON
 NO 4 ENGINE AT 1.6 DEGRFES
 ROW 1 GAGES BETWEEN ENGINE 4 AND 5

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P005	5	0.035	0.005	0.006	0.002
P006	4	0.028	0.003	0.004	0.002
QK01	4	7.510	2.009	2.513	1.257
QK02	4	3.097	0.377	0.471	0.236
QK03	6	5.467	0.820	0.943	0.385
QK04	6	3.822	0.936	1.077	0.440
QK05	5	2.600	0.260	0.309	0.138
QK06	4	1.604	0.601	0.752	0.376
QL02	4	5.852	3.105	3.884	1.942
QL03	5	3.830	1.578	1.875	0.839
QL04	5	2.324	0.552	0.656	0.293
QL05	5	1.267	0.685	0.814	0.364
QL06	5	1.402	0.084	0.100	0.045
QM01	4	2.877	0.471	0.590	0.295
QM02	5	6.044	4.788	5.687	2.543
QM03	6	5.018	1.763	2.027	0.828
QM04	6	3.555	0.972	1.118	0.456
QM05	5	3.306	0.872	1.036	0.463
QM06	5	2.546	0.954	1.134	0.507
Q003	6	6.538	1.345	1.547	0.631
Q004	1	5.750	0.0	0.0	0.0
Q016	3	2.383	0.487	0.671	0.387
Q017	5	0.882	0.206	0.244	0.109
Q024	5	0.130	0.052	0.062	0.028
					0.042
					0.034
					11.280
					3.804
					6.622
					5.141
					3.015
					2.732
					11.678
					6.346
					3.203
					2.359
					1.537
					3.762
					13.674
					7.501
					4.924
					4.696
					4.067
					8.433
					5.750
					3.546
					1.210
					0.213

CASE ----- RUN SERIES 23, LOG 23.1.1

GIMRAL PATTERN --- 8 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE WALL ENVIRONMENT WITH ACTUATOR FAILURES INBOARD ON
 NO 4 ENGINE AT 1.6 DEGREES
 ROW 1 GAGES BETWEEN ENGINE 4 AND 5

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)	
			SMPL	UNIV	MEAN	
						(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA
Q024K	1	0.001	0.0	0.0	0.0	0.001
Q025	3	0.143	0.121	0.167	0.097	0.433
Q044	5	0.127	0.018	0.022	0.010	0.156

CASE ----- RUN SERIES 23, LOG 23.2

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER NOZZLE WALL ENVIRONMENT WITH SINGLE ACTUATOR FAILURE INBOARD.
 NOTE: QK03 AND QK04 RUN 629 RESULTS QUESTIONABLE SINCE OSCILLOSCOPE TRACE EITHER
 COINCIDES OR OFF SCALE. M GAGES AT 315, L AT 292.5, K AT 270 DEGREES.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)
			SMPL	UNIV	
(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA					
P005	5	0.033	0.004	0.004	0.002
P006	6	0.029	0.004	0.004	0.002
QK01	3	35.333	1.835	2.529	1.460
QK02	4	14.625	0.873	1.092	0.546
QK03	6	5.825	1.924	2.213	0.903
QK04	6	3.532	0.636	0.731	0.299
QK05	5	2.702	0.119	0.141	0.063
QK06	5	2.110	0.324	0.385	0.172
QL02	8	10.714	2.252	2.493	0.881
QL04	4	6.525	1.907	2.386	1.193
QL04	5	4.342	0.342	0.406	0.182
QL05	5	2.662	0.126	0.150	0.067
QL06	6	1.883	0.420	0.483	0.197
QM01	7	14.977	13.245	14.902	5.632
QM02	8	9.530	3.996	4.425	1.564
QM03	7	6.454	1.056	1.188	0.449
QM04	7	5.014	0.908	1.021	0.386
QM05	6	3.413	0.373	0.429	0.175
QM06	6	2.458	0.354	0.407	0.166
Q003	6	7.387	1.133	1.303	0.532
Q004	6	6.022	0.782	0.900	0.367
Q008	7	12.386	1.113	1.252	0.473
Q009	5	9.190	0.332	0.394	0.176
Q010	2	4.865	0.865	1.529	1.081

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 23, LOG 23.2

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER NOZZLE WALL ENVIRONMENT WITH SINGLE ACTUATOR FAILURE INBOARD.
 NOTE: QK03 AND QK04 RUN 629 RESULTS QUESTIONABLE SINCE OSCILLOSCOPE TRACE EITHER
 COINCIDES OR OFF SCALE. M GAGES AT 315, L AT 292.5, K AT 270 DEGREES.

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
Q016	6	3.590	0.410	0.471
Q017	6	2.740	0.607	0.698
Q044	1	0.032	0.0	0.0

(Q) IN RTU/50-FT-SEC, (P) IN PSIA

4.167
 3.595
 0.032

CASE ----- RUN SERIES 23, LOG 23.3

GIMBAL PATTERN --- 10 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE INBOARD AT 0.9 DEG

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER NO. OF SAMPLE STANDARD DEVIATION SAMPLE MEAN + 3(1ST DEV MEAN)
 ID SAMPLES

(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

P005	4	0.030	0.002	0.003	0.001	0.034
P006	3	0.027	0.001	0.002	0.001	0.030
QK01	5	2.682	0.703	0.835	0.374	3.803
QK02	5	2.598	0.857	1.019	0.455	3.964
QK03	5	2.854	0.866	1.029	0.460	4.235
QK04	5	2.428	0.609	0.724	0.324	3.399
QK05	3	2.320	0.180	0.247	0.143	2.749
QK06	3	1.587	0.427	0.588	0.340	2.605
QL02	5	2.010	0.313	0.372	0.167	2.510
QL03	4	2.357	0.366	0.458	0.229	3.045
QL04	3	1.940	0.212	0.293	0.169	2.447
QL05	5	1.584	0.298	0.354	0.158	2.059
QL06	3	1.253	0.245	0.338	0.195	1.838
QM01	4	1.649	0.526	0.659	0.329	2.637
QM02	4	2.817	0.411	0.515	0.257	3.590
QM03	5	3.930	0.687	0.816	0.365	5.025
QM04	3	3.593	0.784	1.080	0.624	5.464
QM05	5	2.968	0.881	1.046	0.468	4.371
QM06	5	2.598	0.809	0.961	0.430	3.887
Q003	4	5.907	1.135	1.419	0.710	8.037
Q004	4	6.047	1.071	1.340	0.670	8.058
Q008	4	6.072	1.304	1.631	0.816	8.520
Q009	3	6.410	1.196	1.648	0.952	9.265
Q016	4	2.782	0.323	0.403	0.202	3.388

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 23, LOG 23.3

GIMBAL PATTERN --- 10 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE INBOARD AT 0.9 DEG

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

Q017	4	1.777	0.312	0.390	0.195	2.363
Q025	1	0.044	0.0	0.0	0.0	0.044

CASE ----- RUN SERIES 23, LOG 23.4

GIMBAL PATTERN --- 11 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE INBOARD ON
ENGINE NO 4 AT 6 DEGREES
NOTE THAT ALL THE HEATING RATES ON RUN 697 ARE LOW IN COMPARISON WITH OTHER RUNS

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P005	1	0.070	0.0	0.0	0.070
QK01	5	82.020	12.278	14.586	101.589
QK02	6	26.350	2.645	3.042	30.076
QK03	6	7.008	1.511	1.738	9.137
QK04	6	2.320	0.457	0.525	2.963
QK05	5	1.316	0.071	0.084	1.429
QL01	6	22.983	1.720	1.978	25.406
QL02	6	13.617	1.331	1.531	15.492
QL03	6	4.867	0.776	0.893	5.960
QL04	6	1.933	0.236	0.271	2.265
QL05	6	1.275	0.306	0.352	1.706
QM01	6	4.827	0.758	0.872	5.895
QM02	6	4.837	0.485	0.558	5.520
QM03	6	3.192	0.239	0.275	3.528
QM04	6	2.210	0.229	0.264	2.533
QM05	6	1.578	0.207	0.238	1.869
Q008	6	7.083	2.400	2.760	10.464
Q009	4	7.775	0.955	1.195	9.567
Q010	6	10.867	1.228	1.413	12.597
Q011	5	12.060	0.695	0.825	13.167
Q013	6	14.300	1.599	1.839	16.552
Q014	6	24.333	2.687	3.090	28.118
Q015	6	15.733	2.243	2.580	18.893
Q016	6	6.950	0.386	0.444	7.494

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 23, LOG 23.4

GIMRAL PATTERN --- 11 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE INBOARD ON
ENGINE NO 4 AT 6 DEGREES
NOTE THAT ALL THE HEATING RATES ON RUN 697 ARE LOW IN COMPARISON WITH OTHER RUNS

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

Q017	6	2.027	0.439	0.505	0.206	2.645
Q025	6	0.163	0.063	0.072	0.029	0.251

CASE ----- RUN SERIES 23, LOG 23.5

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH TRANSIENT GIMBAL PATTERN DURING SEPARATION

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER NO. OF SAMPLE STANDARD DEVIATION SAMPLE MEAN
ID SAMPLES MEAN SMPL UNIV MEAN + 3(ST DEV MEAN)

(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

P005	3	0.039	0.002	0.003	0.002	0.044
P022	3	3.643	0.127	0.174	0.101	3.945
P023	3	3.957	0.135	0.186	0.107	4.278
QK01	2	31.900	3.000	5.303	3.750	43.150
QK02	2	18.550	1.050	1.856	1.313	22.488
QK03	3	8.357	0.392	0.540	0.312	9.292
QK04	3	3.620	0.172	0.237	0.137	4.031
QK05	2	1.975	0.105	0.186	0.131	2.369
QL02	2	11.300	0.101	0.178	0.126	11.678
QL03	3	6.747	0.227	0.312	0.180	7.288
QL04	3	3.200	0.078	0.107	0.062	3.386
QL05	3	2.053	0.029	0.040	0.023	2.122
QM01	3	6.133	0.312	0.430	0.248	6.878
QM02	3	4.153	0.049	0.068	0.039	4.271
QM03	3	4.083	0.327	0.451	0.260	4.865
QM04	3	2.260	0.128	0.177	0.102	2.566
QM05	3	2.167	0.083	0.115	0.066	2.366
Q008	3	2.193	0.368	0.507	0.293	3.072
Q010	3	3.177	0.579	0.798	0.461	4.559
Q014	3	11.600	0.993	1.369	0.790	13.971
Q015	3	5.077	0.878	1.210	0.699	7.172
Q016	3	4.620	0.368	0.507	0.293	5.498
Q025	3	0.086	0.007	0.010	0.006	0.102
Q062	2	184.500	7.501	13.260	9.376	212.629

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 23, LOG 23.5

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH TRANSIENT GIMBAL PATTERN DURING SEPARATION

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

Q063	2	198.000	2.167 2.986 1.724	203.171
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CASE ----- RUN SERIES 23, LOG 23.6

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 465.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE AT 5 DEG
 AND LOW PC OF 465 PSIA

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID NO. OF SAMPLES SAMPLE MEAN STANDARD DEVIATION SMPL UNIV MEAN SAMPLE MEAN + 3(ST DEV MEAN)

(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

P005	6	0.031	0.003	0.003	0.001	0.035
P022	8	2.310	0.228	0.253	0.089	2.578
P023	9	2.319	0.148	0.162	0.054	2.481
QK01	9	25.300	1.678	1.836	0.612	27.136
QK02	9	13.544	1.147	1.255	0.418	14.799
QK03	4	6.042	0.269	0.336	0.168	6.547
QK04	8	2.510	0.178	0.197	0.070	2.719
QK05	9	1.360	0.101	0.111	0.037	1.471
Q102	9	8.524	0.628	0.687	0.229	9.211
Q103	9	4.551	0.362	0.396	0.132	4.947
Q104	9	2.072	0.348	0.381	0.127	2.453
Q105	8	1.401	0.084	0.093	0.033	1.500
QM01	9	4.110	0.720	0.787	0.262	4.897
QM02	9	2.811	0.408	0.447	0.149	3.258
QM03	9	2.694	0.270	0.295	0.098	2.990
QM04	9	1.783	0.108	0.118	0.039	1.902
QM05	9	1.590	0.112	0.122	0.041	1.712
Q008	8	1.620	0.167	0.185	0.065	1.816
Q010	7	1.829	0.167	0.188	0.071	2.042
Q014	9	8.211	1.358	1.485	0.495	9.696
Q015	8	3.140	0.234	0.259	0.092	3.415
Q016	9	3.467	0.484	0.530	0.177	3.996
Q025	7	0.049	0.013	0.021	0.008	0.072
Q062	9	137.555	11.286	12.345	4.115	149.900

CASE ----- RUN SERIES 23, LOG 23.6

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 465.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE AT 5 DEG
AND LOW PC OF 465 PSIA

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3 (ST DEV MEAN)
			SMPL	UNIV MEAN	

(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

0063	9	146.222	10.862	11.880	3.960	153.102
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CASE ----- RUN SERIES 23, LOG 23.7

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 215.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE WALL ENVIRONMENT WITH DUAL ACTUATOR FAILURE AT 5 DEGREES INBOARD AND NOMINAL CHAMBER PRESSURE OF 215 PSIA

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P005	5	0.016	0.001	0.002	0.001
P022	5	1.156	0.260	0.309	0.138
P023	5	1.162	0.082	0.097	0.043
QK01	5	13.120	0.349	0.414	0.185
QK02	5	6.494	0.364	0.433	0.193
QK03	3	2.607	0.230	0.317	0.183
QK04	5	1.186	0.152	0.181	0.081
QK05	5	0.680	0.058	0.068	0.031
QL01	4	6.070	0.230	0.288	0.144
QL02	5	4.312	0.165	0.196	0.088
QL03	4	2.555	0.172	0.215	0.108
QL04	4	1.270	0.107	0.133	0.067
QL05	4	0.892	0.098	0.122	0.061
QM01	5	1.204	0.619	0.735	0.329
QM02	5	1.198	0.254	0.302	0.135
QM03	5	1.260	0.087	0.103	0.046
QM04	3	0.863	0.012	0.017	0.010
QM05	5	0.644	0.115	0.137	0.061
Q008	5	0.858	0.063	0.075	0.033
Q010	5	0.818	0.084	0.099	0.044
Q014	5	2.556	0.351	0.417	0.186
Q015	5	2.170	0.209	0.248	0.111
Q016	5	1.588	0.488	0.580	0.259
Q025	4	0.014	0.001	0.001	0.001
					0.019
					1.570
					1.292
					13.676
					7.074
					3.156
					1.428
					0.772
					6.502
					4.575
					2.878
					1.470
					1.076
					2.190
					1.603
					1.399
					0.893
					0.828
					0.958
					0.951
					3.115
					2.503
					2.366
					0.017

CASE ----- RUN SERIES 23, LOG 23.7

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 215.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE WALL ENVIRONMENT WITH DUAL ACTUATOR FAILURE AT 5 DEGREES INBOARD AND NOMINAL CHAMBER PRESSURE OF 215 PSIA

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

Q062	4	89.750	3.421 4.279 2.140	96.169
Q063	5	79.400	3.137 3.727 1.667	84.400

CASE ----- RUN SERIES 24, LOG 24.1.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE THRUST CONE RADIATIVE HEATING.

FLOW-SYMMETRY NOZZLES USED IN THIS TEST

P20,21 ENGINE NU 1, P22,23 ENGINE NO 2, P29 ENGINE NO 5

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)	
			SMPL	UNIV	MEAN	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA						
P020	3	3.917	0.055	0.076	0.044	4.050
P021	3	3.973	0.046	0.063	0.036	4.082
P022	3	4.572	0.261	0.360	0.208	5.195
P023	3	4.235	0.088	0.121	0.070	4.444
P029	3	4.384	0.167	0.231	0.133	4.783
Q022	3	0.011	0.003	0.004	0.002	0.018
Q023	3	0.067	0.010	0.014	0.008	0.091
Q024	3	0.113	0.011	0.015	0.009	0.139
Q024R	2	0.006	0.005	0.008	0.006	0.023
Q025	3	0.216	0.009	0.012	0.007	0.237
Q030	2	0.016	0.005	0.008	0.006	0.033
Q031	3	0.044	0.004	0.005	0.003	0.053
Q032	3	0.070	0.008	0.011	0.007	0.090
Q033	3	0.015	0.012	0.016	0.010	0.044
Q044	3	0.140	0.010	0.013	0.008	0.163

CASE ----- RUN SERIES 25, LOG 25.1

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: HEAT SHIELD PRESSURES WITH ENGINE DEFLECTIONS.
 DEFLECTION PATTERN ROTATED 180 DEGREES

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
PSIA				
P001	3	0.066	0.007 0.010 0.006	0.083
P002	2	0.056	0.002 0.004 0.003	0.065
P003	3	0.094	0.010 0.013 0.008	0.117
P005	2	0.065	0.005 0.009 0.007	0.085
P006	3	0.063	0.008 0.012 0.007	0.083
P007	3	0.035	0.001 0.001 0.001	0.037
P008	2	0.033	0.002 0.004 0.003	0.041
P011	3	0.066	0.003 0.005 0.003	0.074

CASE ----- RUN SERIES 25, LOG 25.2

GIMBAL PATTERN --- 6A MIXTURE RATIO --- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: HEAT SHIELD PRESSURES WITH ENGINE DEFLECTIONS.
 DEFLECTION PATTERN ROTATED 180 DEGREES

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)
			SMPL	UNIV	
PSIA					
P001	1	0.044	0.0	0.0	0.044
P002	3	0.050	0.003	0.004	0.056
P003	3	0.038	0.003	0.004	0.045
P005	3	0.037	0.002	0.002	0.040
P006	3	0.033	0.001	0.002	0.036
P007	3	0.045	0.008	0.012	0.065
P008	3	0.031	0.000	0.000	0.031
P011	1	0.035	0.0	0.0	0.035

CASE ----- RUN SERIES 26, LOG 26.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NULL NOZZLE HEATING RATES
 SKIRT GAGES MOUNTED ON ENGINE NO 5

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV		
P005	5	0.029	0.002	0.003	0.001	0.033
P006	4	0.021	0.003	0.003	0.002	0.027
QK01	6	1.031	0.376	0.433	0.177	2.161
QK02	6	1.650	0.549	0.632	0.258	2.424
QK03	3	2.114	0.118	0.162	0.094	2.395
QK04	3	1.687	0.151	0.208	0.120	2.047
QK05	5	1.547	0.407	0.483	0.216	2.195
QK06	4	1.066	0.126	0.157	0.079	1.302
QL01	3	0.952	0.250	0.344	0.199	1.549
QL02	2	0.773	0.100	0.176	0.124	1.147
QL03	5	1.549	0.192	0.228	0.102	1.855
QL04	5	1.599	0.274	0.326	0.146	2.037
QL05	5	1.388	0.474	0.563	0.252	2.144
QL06	4	1.060	0.060	0.075	0.037	1.173
QM01	5	2.085	0.530	0.630	0.282	2.930
QM02	5	2.026	0.779	0.926	0.414	3.268
QM03	6	3.252	1.181	1.359	0.555	4.916
QM04	1	3.060	0.0	0.0	0.0	3.060
QM05	5	2.382	0.826	0.982	0.439	3.699
QM06	4	1.868	0.603	0.755	0.377	3.001
Q003	1	4.600	0.0	0.0	0.0	4.600
Q004	1	5.650	0.0	0.0	0.0	5.650
Q008	1	5.730	0.0	0.0	0.0	5.730
Q016	1	2.680	0.0	0.0	0.0	2.680

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 26, LOG 26.1

GIMHAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NULL NOZZLE HEATING RATES
SKIRT GAGES MOUNTED ON ENGINE NO 5

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
Q017	1	2.220	0.0	0.0	2.220
Q025	1	0.140	0.0	0.0	0.140

(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

CASE ----- RUN SERIES 26, LOG 26.2

GIMBAL PATTERN ---- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NULL NOZZLE WALL HEATING RATES.
 SKIRT GAGES MOUNTED ON NO 4 ENGINE

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3 (ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P005	3	0.043	0.015	0.020	0.012
P006	5	0.031	0.008	0.009	0.004
QK01	5	0.801	0.148	0.176	0.079
QK02	5	0.815	0.110	0.130	0.058
QK03	4	0.722	0.110	0.138	0.069
QK04	4	0.786	0.105	0.132	0.066
QK05	4	1.366	0.107	0.134	0.067
QK06	5	0.837	0.096	0.114	0.051
QL01	2	0.413	0.026	0.046	0.033
QL02	3	0.660	0.003	0.004	0.002
QL03	4	0.823	0.247	0.309	0.154
QL04	4	0.896	0.106	0.132	0.066
QL05	5	0.790	0.232	0.275	0.123
QL06	5	0.744	0.322	0.383	0.171
QM01	5	0.480	0.025	0.030	0.013
QM02	5	0.915	0.177	0.211	0.094
QM03	5	1.418	0.401	0.476	0.213
QM04	4	1.537	0.163	0.204	0.102
QM05	5	1.242	0.352	0.418	0.187
QM06	5	1.094	0.245	0.291	0.130
Q003	5	5.268	0.829	0.985	0.440
Q004	5	5.488	0.463	0.550	0.246
Q008	2	5.920	0.450	0.795	0.562
Q009	3	6.300	0.829	1.142	0.659
					0.079
					0.044
					1.037
					0.990
					0.929
					0.984
					1.567
					0.989
					0.511
					0.667
					1.287
					1.094
					1.160
					1.257
					0.520
					1.197
					2.057
					1.844
					1.802
					1.484
					6.589
					6.226
					7.607
					8.278

CASE ----- RUN SERIES 26, LOG 26.2

GIMBAL PATTERN ---- NO DEFLECTION MIXTURE RATIO ----- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NULL NOZZLE WALL HEATING RATES.
SKIRT GAGES MOUNTED ON NO 4 ENGINE

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
Q010	5	3.782	0.769	0.913	0.408
Q014	5	1.955	0.232	0.276	0.123
Q025	5	0.172	0.025	0.030	0.013
					5.007
					2.325
					0.212

(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA

CASE ----- RUN SERIES 27, LOG 27.1

GIMBAL PATTERN --- 8 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NOZZLE ENVIRONMENT WITH ACTUATOR FAILURES INBOARD.
 SKIRT GAGES MOUNTED ON ENGINE NO 4.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P005	3	0.031	0.001	0.002	0.001
P006	3	0.030	0.001	0.002	0.001
QK01	3	0.891	0.111	0.153	0.088
QK02	3	0.820	0.198	0.273	0.158
QK03	3	0.726	0.158	0.218	0.126
QK04	3	0.778	0.152	0.209	0.121
QK05	3	0.947	0.212	0.293	0.169
QK06	3	1.065	0.224	0.309	0.178
QL02	3	0.626	0.045	0.062	0.036
QL03	3	0.735	0.032	0.044	0.026
QL04	2	0.882	0.013	0.022	0.016
QL05	3	0.790	0.033	0.045	0.026
QL06	3	0.892	0.037	0.051	0.029
QM01	3	0.530	0.059	0.081	0.047
QM02	3	1.210	0.078	0.107	0.062
QM03	3	1.750	0.203	0.280	0.162
QM04	3	1.743	0.125	0.172	0.099
QM05	3	1.503	0.098	0.135	0.078
QM06	2	1.342	0.022	0.039	0.028
Q003	3	6.833	0.381	0.524	0.303
Q004	3	6.357	0.325	0.448	0.259
Q008	3	7.100	2.054	2.830	1.634
Q009	2	7.485	0.245	0.433	0.306
Q010	2	2.705	0.455	0.804	0.569
					0.034
					0.034
					1.156
					1.293
					1.103
					1.141
					1.454
					1.600
					0.733
					0.812
					0.929
					0.868
					0.980
					0.671
					1.396
					2.235
					2.041
					1.737
					1.475
					7.742
					7.133
					12.001
					8.404
					4.411

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 27, LOG 27.1

GIMBAL PATTERN --- 8 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NOZZLE ENVIRONMENT WITH ACTUATOR FAILURES INBOARD.
SKIRT GAGES MOUNTED ON ENGINE NO 4.

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
		(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA		
Q014	2	1.885	0.125	0.221
Q025	3	0.199	0.049	0.068
				0.156
				0.039
				2.354
				0.317

CASE ----- RUN SERIES 27, LOG 27.2.1

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NO 4 NOZZLE ENVIRONMENT WITH 3 DEGREE ACTUATOR FAILURE
ON NU 4 ENGINE

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV		
P005	3	0.035	0.000	0.001	0.000	0.036
P006	3	0.032	0.001	0.002	0.001	0.035
QK01	3	1.073	0.132	0.182	0.105	1.389
QK02	2	1.130	0.250	0.442	0.313	2.068
QK03	2	1.065	0.165	0.292	0.206	1.684
QK04	2	1.120	0.150	0.265	0.187	1.682
QK05	3	1.403	0.111	0.153	0.088	1.668
QK06	3	1.357	0.070	0.097	0.056	1.525
QL02	3	0.667	0.059	0.081	0.047	0.808
QL03	2	0.710	0.080	0.141	0.100	1.010
QL04	3	0.733	0.172	0.237	0.137	1.144
QL05	3	1.060	0.304	0.419	0.242	1.786
QL06	3	1.010	0.029	0.041	0.023	1.080
QM01	3	0.337	0.092	0.126	0.073	0.556
QM02	3	0.780	0.227	0.313	0.180	1.321
QM03	3	1.197	0.262	0.362	0.209	1.823
QM04	3	1.250	0.174	0.239	0.138	1.665
QM05	3	1.103	0.172	0.237	0.137	1.514
QM06	2	1.110	0.070	0.124	0.087	1.372
QN03	2	7.725	0.175	0.309	0.219	8.381
QN04	3	6.620	0.940	1.296	0.748	8.864
QN08	2	11.600	0.600	1.061	0.750	13.850
QN09	3	9.997	1.140	1.571	0.907	12.718
QN10	3	2.367	0.128	0.177	0.102	2.672

CASE ----- RUN SERIES 27, LOG 27.2.1

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NO 4 NOZZLE ENVIRONMENT WITH 3 DEGREE ACTUATOR FAILURE
ON NO 4 ENGINE

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
0014	2	5.095	0.365	0.645
0025	3	0.207	0.021	0.029
				0.456
				0.017
				6.464
				0.257

(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

CASE ----- RUN SERIES 27, LOG 27.2.2

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NO 1 NOZZLE ENVIRONMENT WITH 3 DEGREE ACTUATOR FAILURE
 ON NO 4 ENGINE

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NÜ. UF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(1ST DEV MEAN)	
			SMPL	UNIV	MEAN	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA						
P005	2	0.038	0.003	0.005	0.004	0.049
P006	3	0.031	0.002	0.002	0.001	0.035
P006	3	0.031	0.002	0.002	0.001	0.035
QK01	3	1.367	0.033	0.045	0.026	1.445
QK02	3	1.607	0.078	0.107	0.062	1.792
QK03	3	1.283	0.095	0.130	0.075	1.509
QK04	3	1.300	0.104	0.144	0.083	1.549
QK05	2	1.455	0.145	0.256	0.181	1.999
QK06	2	1.800	0.060	0.106	0.075	2.025
QL03	2	4.435	0.155	0.274	0.194	5.016
QL04	2	4.415	0.115	0.203	0.144	4.846
QL05	2	4.035	0.225	0.398	0.231	4.879
QL06	2	3.210	0.090	0.159	0.112	3.547
QM01	2	0.970	0.010	0.018	0.012	1.007
QM02	3	2.203	0.282	0.389	0.224	2.877
QM03	3	3.120	0.374	0.516	0.298	4.013
QM04	3	3.170	0.276	0.380	0.220	3.829
QM05	1	4.230	0.0	0.0	0.0	4.230
QM06	2	3.745	0.255	0.451	0.319	4.701
QO10	2	3.870	0.150	0.265	0.137	4.432
QO13	3	5.217	0.302	0.416	0.240	5.937
QO14	3	2.783	0.584	0.805	0.465	4.177
QO15	3	6.333	1.225	1.688	0.974	9.257
QO19	3	3.263	0.409	0.564	0.326	4.240

CASE ----- RUN SERIES 27, LOG 27.2.2

GIMBAL PATTERN --- 6A MIXTURE RATIO --- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NO 1 NOZZLE ENVIRONMENT WITH 3 DEGREE ACTUATOR FAILURE
ON NO 4 ENGINE

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
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(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

0025	3	0.081	0.011 0.016 0.009	0.108
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CASE ----- RUN SERIES 27, LOG 27.3

GIMBAL PATTERN --- 10 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE WALL ENVIRONMENT WITH ACTUATOR FAILURES.
 SKIRT GAGES ON NOZZLE 4.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV	MEAN	SAMPLE MEAN + 3 (ST DEV MEAN)
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P005	4	0.046	0.027	0.034	0.017
P006	3	0.037	0.008	0.011	0.006
QK01	4	0.768	0.320	0.401	0.200
QK02	4	1.054	0.363	0.455	0.227
QK03	4	0.742	0.347	0.434	0.217
QK04	4	0.722	0.251	0.313	0.157
QK05	4	1.070	0.300	0.376	0.188
QK06	3	0.762	0.179	0.247	0.143
QL02	4	0.749	0.346	0.433	0.216
QL03	4	0.657	0.262	0.328	0.164
QL04	3	0.801	0.177	0.243	0.140
QL05	4	0.956	0.180	0.225	0.113
QL06	4	1.000	0.194	0.243	0.122
QM01	4	0.637	0.337	0.421	0.211
QM02	4	0.990	0.414	0.518	0.259
QM03	4	1.685	0.070	0.087	0.044
QM04	4	1.709	0.470	0.588	0.294
QM05	3	1.310	0.144	0.199	0.115
QM06	2	1.245	0.095	0.168	0.119
Q003	3	4.650	1.164	1.604	0.926
Q004	4	5.952	1.275	1.595	0.798
Q008	3	4.997	1.491	2.055	1.186
Q009	3	7.067	0.272	0.375	0.216
Q010	3	3.360	0.580	0.800	0.462
					0.097
					0.055
					1.370
					1.736
					1.392
					1.193
					1.633
					1.190
					1.398
					1.149
					1.222
					1.294
					1.365
					1.268
					1.767
					1.816
					2.592
					1.655
					1.601
					7.428
					8.345
					8.556
					7.716
					4.745

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 27, LOG 27.3

GIMBAL PATTERN --- 10 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE WALL ENVIRONMENT WITH ACTUATOR FAILURES.
SKIRT GAGES ON NOZZLE 4.

(CONTINUED FROM PREVIOUS PAGE)

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION SMPL UNIV MEAN	SAMPLE MEAN + 3(ST DEV MEAN)
------------------	-------------------	----------------	--------------------------------------	---------------------------------

(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

Q014	4	1.895	0.277 0.346 0.173	2.414
Q025	2	0.140	0.095 0.168 0.119	0.497

CASE ----- RUN SERIES 28, LOG 28.1

GIMBAL PATTERN --- 2B MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: ENVIRONMENT OF THE INOPERATIVE OUTBOARD ENGINE WITH THE INOPERATIVE
 ENGINE DEFLECTED. DOUBTFUL WHETHER ENGINE WAS DEFLECTED DURING THE TEST.

SUMMARY OF STATISTICAL ANALYSIS OF NORMALIZED DATA

TRANSDUCER ID	NO. OF SAMPLES	SAMPLE MEAN	STANDARD DEVIATION		SAMPLE MEAN + 3(ST DEV MEAN)
			SMPL	UNIV	
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P005	3	0.011	0.001	0.002	0.001
P006	3	0.020	0.014	0.019	0.011
QK01	4	0.507	0.020	0.026	0.013
QK02	3	0.563	0.066	0.091	0.053
QK03	5	0.474	0.094	0.112	0.050
QK04	5	0.440	0.119	0.141	0.063
QK05	4	0.517	0.100	0.126	0.063
QK06	4	0.607	0.117	0.147	0.073
QL02	4	0.425	0.099	0.123	0.062
QL03	5	0.578	0.104	0.123	0.055
QL04	5	0.506	0.155	0.184	0.082
QL05	5	0.644	0.188	0.223	0.100
QL06	5	0.784	0.227	0.270	0.121
QM01	5	0.266	0.057	0.068	0.031
QM02	5	0.239	0.084	0.100	0.045
QM03	5	0.306	0.017	0.021	0.009
QM04	5	0.325	0.018	0.021	0.010
QM05	5	0.384	0.055	0.065	0.029
QM06	5	0.422	0.054	0.064	0.029
QN01	1	0.015	0.0	0.0	0.0
QN03	3	0.038	0.000	0.001	0.000
QO09	5	7.016	0.769	0.913	0.408
QO15	3	6.577	1.139	1.570	0.906
QO25	1	0.018	0.0	0.0	0.0

3.0 TABULATIONS OF NORMALIZED TEST DATA

During the test program, it was intended to hold the chamber pressure and mixture ratio for each set of runs at a constant value. However, due to practical limitations, some variation of the measured chamber pressure occurred from run to run. Therefore, in the analysis of the model data, the test values are first normalized to the nominal chamber pressure value using the experimentally and analytically determined correlations, i.e.,

$$P_b \sim P_c$$

$$q \sim P_c$$

The following notation is used in the test data tabulation of this section.

PC	Chamber Pressure
ALT	Altitude corresponding to test chamber pressure
PO2	Oxygen charge tube pressure
PH2	Hydrogen charge tube pressure
TO2	Oxygen charge tube temperature
TH2	Hydrogen charge tube temperature
DO2	Oxygen charge tube venturi diameter
DH2	Hydrogen charge tube venturi diameter

A summary of all the test cases run during this test program, and presented in this section, is given in Table 5-1, Volume I.

CASE ----- RUN SERIES C01, LOG C01

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: PRELIMINARY CHECKOUT FOR COMPARISON WITH PREVIOUS CAL RESULTS

NORMALIZED TEST DATA

RUN NUMBER	1	2	3	4	5	7	8	9	11	12	13
PC (PSIA)	642.0	631.0	672.0	687.0	670.0	721.0	705.0	---	678.0	629.0	640.0
ALT (MU HG A)	27.0	30.0	18.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
PD2 (PSIA)	1040.0	1040.0	1055.0	1055.0	1040.0	1040.0	1040.0	1015.0	1015.0	1015.0	1015.0
PH2 (PSIA)	1040.0	1040.0	1055.0	1055.0	1040.0	1040.0	1040.0	1015.0	1015.0	1015.0	1015.0
TD2 (F)	---	---	---	---	---	---	---	---	---	---	---
TH2 (F)	---	---	---	---	---	---	---	---	---	---	---
DD2 (IN)	---	---	---	---	---	---	---	---	---	---	---
IDH2 (IN)	---	---	---	---	---	---	---	---	---	---	---

TRANSDUCER OUTPUT

	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA										
P007	0.030	---	---	---	---	---	0.023	0.018	0.024	0.024	0.034
P011	0.025	---	---	---	---	---	0.030	0.022	0.027	---	0.019
P015	---	---	---	---	0.001	0.001	---	---	---	---	---
P017	---	---	---	---	0.003	0.004	---	---	---	---	---
Q001	1.850	---	---	---	---	---	2.140	1.300	1.180	1.590	1.520
Q002	---	---	---	---	---	---	3.290	1.320	2.200	2.230	3.180
Q003	3.110	---	---	4.180	5.180	4.170	4.720	3.640	---	---	---
Q004	---	---	---	---	---	---	4.970	5.030	---	---	---
Q008	---	---	---	---	---	---	---	---	2.840	3.820	---
Q020	---	---	---	0.007	0.008	0.005	---	---	---	---	---
Q021	---	---	---	0.016	0.010	0.004	---	---	---	---	---
Q022	---	0.016	---	0.016	0.018	0.017	---	---	---	---	---
Q023	---	0.032	0.049	0.054	0.058	0.054	0.070	0.057	---	---	---
Q024	---	---	0.080	0.085	0.096	0.093	0.099	0.091	---	---	---
Q025	---	---	---	0.208	0.186	0.190	0.226	0.188	0.211	0.251	0.197

CASE ----- RUN SERIES C03, LOG C03.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE MODEL OPERATION WITH VARIABLE O/F RATIO

NORMALIZED TEST DATA

RUN NUMBER	44	46	49	51	52	53
PC (PSIA)	621.0	660.0	637.0	655.0	645.0	661.0
ALT (MU HG A)	27.0	27.0	30.0	25.0	18.0	27.0
PO2 (PSIA)	1280.0	1280.0	1230.0	1280.0	1280.0	1280.0
PH2 (PSIA)	1315.0	1315.0	1295.0	1315.0	1315.0	1315.0
TO2 (F)	----	----	----	----	----	----
TH2 (F)	----	----	----	----	----	----
DO2 (IN)	----	----	----	----	----	----
OH2 (IN)	----	----	----	----	----	----

114 TRANSDUCER

ID	TRANSDUCER OUTPUT			(Q) IN BTU/50-FT-SEC, (P) IN PSIA	
P007	----	0.032	----	----	0.018
P011	----	0.020	0.021	0.023	0.019
P015	----	----	0.001	----	0.003
P017	----	----	----	0.002	0.001
Q008	----	2.699	----	----	----
Q024	----	0.075	0.075	0.096	0.109
Q025	----	0.108	0.108	0.254	0.220
					0.259

CASE ----- RUN SERIES C03, LOG C03.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 4.50
 NOMINAL PC ----- 546.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE MODEL OPERATION WITH VARIABLE O/F RATIO

NORMALIZED TEST DATA

RUN NUMBER	54	55	56	57	58	60	61	62
PC (PSIA)	651.0	575.0	574.0	567.0	568.0	545.0	522.0	603.0
ALT (MU HG A)	15.0	20.0	27.0	29.0	25.0	27.0	25.0	26.0
P02 (PSIA)	1230.0	1130.0	1030.0	1030.0	1030.0	1030.0	1030.0	1030.0
PH2 (PSIA)	1415.0	1305.0	1190.0	1190.0	1190.0	1190.0	1190.0	1190.0
T02 (F)	-----	-----	-----	-----	-----	-----	-----	-----
TH2 (F)	-----	-----	-----	-----	-----	-----	-----	-----
D02 (IN)	-----	-----	-----	-----	-----	-----	-----	-----
DH2 (IN)	-----	-----	-----	-----	-----	-----	-----	-----

TRANSDUCER

ID	(Q) IN	BTU/SQ-FT-SEC (P) IN	PSIA
P007	0.015	0.010	0.012
P011	-----	0.002	-----
P015	-----	0.002	-----
P017	-----	0.002	-----
Q007	-----	1.736	-----
Q008	-----	-----	-----
Q024	0.029	0.088	0.081
Q025	0.037	0.159	0.317

CASE ----- RUN SERIES C03, LOG C03.3

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE MODEL OPERATION WITH VARIABLE O/F RATIO

NORMALIZED TEST DATA

RUN NUMBER	64	65	66	67	68	69	70	71
PC (PSIA)	666.0	696.0	---	710.0	731.0	720.0	714.0	743.0
ALT (MU HG A)	24.0	29.0	28.0	26.0	25.0	27.0	27.0	24.0
PO2 (PSIA)	1330.0	1380.0	1380.0	1380.0	1380.0	1380.0	1365.0	1365.0
PH2 (PSIA)	1260.0	1310.0	1310.0	1310.0	1310.0	1310.0	1295.0	1295.0
TO2 (F)	----	----	----	----	----	----	----	----
TH2 (F)	----	----	----	----	----	----	----	----
DO2 (IN)	----	----	----	----	----	----	----	----
DH2 (IN)	----	----	----	----	----	----	----	----

TRANSDUCER

ID	(Q) IN	RTU/SQ-FT-SEC, (P)	IN PSIA
P007	----	0.026	0.024
P011	0.027	0.037	0.032
P015	0.003	0.002	0.001
P017	----	0.002	0.002
Q007	----	3.132	3.327
Q008	----	3.380	2.670
Q025	0.243	0.175	0.209
	0.234	0.241	0.183
	----	----	1.412
	0.234	0.175	0.140
	----	----	2.377
	0.234	0.175	0.250

CASE ----- RUN SERIES C04, LOG C04.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE FLOW SYMMETRY AT NOZZLE EXITS

NORMALIZED TEST DATA

RUN NUMBER	325	326	450	451	452	453
PC (PSIA)	634.0	610.0	610.0	603.0	615.0	629.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0
TO2 (F)	153.0	170.0	165.0	163.0	166.0	166.0
TH2 (F)	134.0	140.0	156.0	152.0	156.0	156.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
IDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANS-DUCER	TRANSDUCER OUTPUT					
ID	(Q) IN	BTU/SQ-FT-SEC,	(P) IN	(PSIA)		
P020	3.319	3.222	3.584	3.566	3.326	
P021	3.339	2.994	3.574	3.556	3.326	
P022	3.130	2.849	3.385	3.484	3.456	
P023	3.140	3.119	3.375	3.792	3.657	
P024	2.951	2.818	3.679	3.001	3.617	
P025	2.791	2.746	3.647	3.206	3.326	
P026	3.230	3.129	3.301	3.720	3.416	
P027	3.529	3.616	3.480	3.658	3.396	
P028	3.300	2.911	3.958	4.111	3.617	
P029	3.359	3.274	3.719	3.936	3.336	
Q060	213.325	---	237.259	230.580	238.413	228.083
Q061	---	121.220	170.951	191.801	196.280	198.944
Q062	99.685	123.292	---	216.955	---	---
Q063	162.486	153.338	---	---	220.943	249.183
Q064	172.454	173.023	180.275	195.993	---	---
Q065	---	---	---	---	171.616	192.916
Q066	---	---	347.082	325.957	---	---
Q067	195.382	---	---	---	288.767	357.698
Q068	161.489	167.843	200.997	189.705	191.141	204.973

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES C04, LOG C04.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE FLOW SYMMETRY AT NOZZLE EXITS

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	325	326	450	451	452	453
PC (PSIA)	634.0	610.0	610.0	603.0	615.0	629.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0
TO2 (F)	153.0	170.0	165.0	163.0	166.0	166.0
TH2 (F)	134.0	140.0	156.0	152.0	156.0	156.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID

Q069

TRANSDUCER OUTPUT

(Q) IN BTU/SQ-FT-SEC, (P) IN (PSIA)

138.562	241.403	248.398	265.137	267.269
---------	---------	---------	---------	---------

RUN SERIES C04, LOG C04.3

NO DEFLECTION	MIXTURE RATIO	----	5.00
632.0 PSIA	INTERSTAGE	-----	OFF

REMARKS: TO EVALUATE FLOW SYMMETRY AND EFFECT OF NOZZLE ENTRANCE AREA.
SPECIAL LARGE DIAMETER PASSAGE TO NOZZLE THROAT ON NOZZLE 1 (RUNS 577 AND 578), NOZZLE 5 (RUNS 579 AND 580), NOZZLE 3 (RUNS 581 AND 582)

NORMALIZED TEST DATA

RUN NUMBER	577	578	579	580	581	582
PC (PSIA)	610.0	615.0	626.0	615.0	610.0	621.0
ALT (MU HG A)	35.0	27.0	29.0	26.0	35.0	22.0
PO2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0
TO2 (F)	160.0	160.0	160.0	154.0	157.0	159.0
TH2 (F)	164.0	162.0	161.0	161.0	161.0	161.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER OUTPUT

ID	3.502	3.658	3.493	(Q) IN RTU/SQ-FT-SEC	3.535	3.637	3.501
P020	3.502	3.658	3.493	3.535	3.637	3.501	
P021	3.523	3.782	3.523	3.535	3.606	3.409	
P022	3.222	3.412	3.443	3.371	3.906	3.786	
P023	3.492	3.473	3.392	3.535	3.616	3.420	
P024	3.150	3.268	3.554	3.299	3.419	3.420	
P025	3.233	3.350	3.271	3.473	3.357	3.460	
P026	3.440	3.360	3.493	3.432	3.450	3.247	
P027	3.751	3.689	3.675	3.802	3.688	3.766	
P028	3.554	3.422	3.574	3.412	3.802	3.755	
P029	3.585	3.782	3.978	4.049	3.823	4.101	
Q060	207.213	225.054	195.859	209.639	211.357	203.543	
Q061	211.357	210.667	179.706	199.363	190.636	199.472	
Q064	200.997	233.275	207.974	224.026	238.295	162.834	
Q065	156.446	182.920	165.572	166.478	188.564	154.692	
Q068	215.502	220.943	-----	224.026	-----	221.861	
Q069	217.574	213.750	248.358	265.132	-----	199.472	

CASE ----- RUN SERIES C05, LOG C05

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ----- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: ATTEMPT TO EVALUATE CAUSE OF THRUST STRUCTURE HEATING. DATA IS QUESTIONABLE DUE TO POSSIBLE NOZZLE ADAPTER LEAKS FORWARD OF THE HEAT SHIELD. 19 INCH DIAMETER DISK INSTALLED AT STATION -5 (0.44 INCH FORWARD OF NOZZLE EXIT PLANE).

NORMALIZED TEST DATA

RUN NUMBER	146	147	148	149
PC (PSIA)	645.0	682.0	676.0	736.0
ALT (MU HG A)	28.0	25.0	26.0	18.0
P02 (PSIA)	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0
TC2 (F)	145.0	165.0	150.0	153.0
TH2 (F)	132.0	131.0	120.0	133.0
DC2 (IN)	-----	-----	-----	-----
1 DH2 (IN)	-----	-----	-----	-----

120 TRANSDUCER

ID	TRANSDUCER OUTPUT (0) IN HTU/SQ-FT-SEC, (P) IN PSIA			
P016	0.001	0.001	0.002	0.001
P017	0.001	0.001	0.001	0.001
P018	0.001	0.001	0.001	0.001
Q001	2.126	0.593	2.375	2.825
Q002	3.096	0.973	2.758	5.676
Q003	6.545	4.318	5.628	5.616
Q004	5.272	3.243	4.890	5.616
Q008	5.801	2.780	4.460	5.616
Q009	5.379	3.382	4.675	5.616
Q011	5.252	1.789	2.029	1.829
Q013	5.262	1.789	2.543	2.190
Q015	3.763	2.548	3.160	2.722
Q016	2.538	2.548	3.310	1.374
Q019	2.714	2.437	1.599	1.666
Q022	0.074	0.091	0.092	0.037
Q023	0.022	0.019	0.008	0.004
Q024	0.019	0.019	0.009	0.003
Q025	0.023	0.032	0.009	0.003
Q031	0.017	0.032	0.009	0.003

CASE ----- RUN SERIES C05, LOG C05

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: ATTEMPT TO EVALUATE CAUSE OF THRUST STRUCTURE HEATING. DATA IS QUESTIONABLE DUE TO POSSIBLE NOZZLE ADAPTER LEAKS FORWARD OF THE HEAT SHIELD. 19 INCH DIAMETER DISK INSTALLED AT STATION -5 (0.44 INCH FORWARD OF NOZZLE EXIT PLANE).

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	146	147	148	149
PC (PSIA)	645.0	682.0	676.0	736.0
ALT (MU HG A)	28.0	25.0	26.0	18.0
PN2 (PSIA)	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0
TD2 (F)	145.0	165.0	150.0	153.0
TH2 (F)	132.0	131.0	120.0	133.0
ID02 (IN)	-----	-----	-----	-----
ODH2 (IN)	-----	-----	-----	-----

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA			
	146	147	148	149
Q035	0.005	0.006	0.003	0.003
Q036	0.002	0.001	-----	-----

CASE ----- RUN SERIES 1, LOG 1.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: BASE LINE DATA FOR NOMINAL CONDITION

NORMALIZED TEST DATA

RUN NUMBER	103	104	105	106	107	108	109
PC (PSIA)	641.0	669.0	663.0	669.0	630.0	680.0	638.0
ALT (MU HG A)	27.0	26.0	15.0	27.0	28.0	27.0	28.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0	1265.0	1265.0
TO2 (F)	-----	-----	-----	-----	-----	-----	-----
TH2 (F)	-----	-----	-----	-----	-----	-----	-----
DO2 (IN)	-----	-----	-----	-----	-----	-----	-----
DH2 (IN)	-----	-----	-----	-----	-----	-----	-----

12 TRANSDUCER

ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, P IN PSIA						
P016	0.001	0.001	0.002	0.002	0.001	-----	0.001
P017	0.001	0.001	0.001	0.002	0.001	-----	0.001
P018	0.002	0.001	0.001	0.001	0.002	0.001	0.001
Q001	0.887	2.352	1.544	0.680	3.672	0.929	-----
Q002	1.548	2.173	2.850	1.011	-----	-----	2.813
Q003	-----	-----	3.975	-----	-----	4.861	-----
Q004	-----	4.827	4.061	-----	5.838	-----	-----
Q008	3.313	3.495	4.690	1.549	3.852	2.630	-----
Q009	5.324	4.251	4.957	1.965	4.013	3.773	-----
Q011	2.534	2.059	2.488	2.966	2.618	2.091	2.625
Q013	2.544	-----	2.841	2.447	2.929	1.896	1.753
Q015	3.855	3.382	4.242	2.522	3.892	2.017	2.853
Q016	3.411	3.080	3.003	3.779	2.869	2.240	3.041
Q019	2.524	2.796	2.774	2.154	2.438	2.026	2.764
Q022	-----	0.017	0.015	0.012	0.017	0.020	-----
Q023	0.034	0.054	0.075	0.043	0.026	0.065	0.038
Q024	0.041	0.063	0.059	0.055	0.033	0.084	0.039
Q025	0.159	0.147	0.161	0.103	0.069	0.172	0.070
Q031	0.037	0.034	0.031	0.032	0.025	0.043	0.026

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 1, LOG 1.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: BASE LINE DATA FOR NOMINAL CONDITION

NORMALIZED TEST DATA
 (CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	103	104	105	106	107	108	109
PC (PSIA)	641.0	669.0	663.0	669.0	630.0	680.0	638.0
ALT (MU HG A)	27.0	26.0	15.0	27.0	28.0	27.0	28.0
P02 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
P02 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0	1265.0	1265.0
T02 (F)	----	----	----	----	----	----	----
TH2 (F)	----	----	----	----	----	----	----
DD2 (IN)	----	----	----	----	----	----	----
DH2 (IN)	----	----	----	----	----	----	----
TRANSDUCER ID	TRANSDUCER OUTPUT						
Q035	0.057	0.059	0.062	0.038	0.037	0.054	0.040
Q036	0.087	0.069	0.069	0.034	0.042	0.056	0.031

CASE ----- RUN SERIES 1, LOG 1.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ----- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TEST FOR ALTITUDE EFFECTS ON BASE ENVIRONMENT. MAXIMUM SIMULATED ALT.

NORMALIZED TEST DATA

RUN NUMBER	110	112	114	115	116
PC (PSIA)	632.0	649.0	681.0	659.0	642.0
ALT (MU HG A)	6.0	0.5	0.6	0.6	0.7
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0
TO2 (F)	-----	-----	-----	-----	-----
TH2 (F)	-----	-----	-----	-----	-----
DO2 (IN)	-----	-----	-----	-----	-----
DH2 (IN)	-----	-----	-----	-----	-----

124 TRANSDUCER

ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	
P016	0.001	0.002
P017	0.001	0.002
P018	0.000	0.000
Q001	1.510	1.967
Q002	2.850	3.387
Q003	-----	5.058
Q004	-----	5.327
Q008	2.360	5.383
Q009	-----	6.042
Q011	2.750	1.967
Q013	2.480	2.088
Q015	2.310	3.137
Q016	2.780	1.958
Q019	1.530	2.218
Q022	0.018	0.032
Q023	0.062	0.028
Q024	0.079	0.038
Q025	0.234	0.087
Q031	0.039	0.030

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 1, LOG 1.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TEST FOR ALTITUDE EFFECTS ON BASE ENVIRONMENT. MAXIMUM SIMULATED ALT.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	110	112	114	115	116
PC (PSIA)	632.0	649.0	681.0	659.0	642.0
ALT (MU HG A)	6.0	0.5	0.6	0.6	0.7
P02 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0
T02 (F)	-----	-----	-----	-----	-----
TH2 (F)	-----	-----	-----	-----	-----
DO2 (IN)	-----	-----	-----	-----	-----
DH2 (IN)	-----	-----	-----	-----	-----

TRANSDUCER ID	TRANSDUCER OUTPUT		
	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA
Q035	0.061	0.031	0.040
Q036	0.074	0.025	0.040

CASE ----- RUN SERIES 1, LOG 1.3 AND 1.4

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: FOR COMPARISON OF 210 AND 256 INCH HEAT SHIELDS ON THRUST STRUCTURE HTG.
 TC HEATING RATES AND PRESSURES QUESTIONABLE DUE TO HOT GAS LEAKAGE FROM NOZZLE ADAPTERS. UNEXPL-
 AINED INCREASES OCCURRED ON SOME TC GAGES (USUALLY Q22 AND Q35). 210 INCH HEAT SHIELD & HIGH ALT

NORMALIZED TEST DATA

RUN NUMBER	117	118	119	120	121	122
PC (PSIA)	653.0	616.0	640.0	629.0	653.0	654.0
ALT (MU HG A)	25.0	27.0	27.0	0.7	0.7	2.0
P02 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0	1265.0
T02 (F)	----	----	----	----	----	----
TH2 (F)	----	----	----	----	----	----
D02 (IN)	----	----	----	----	----	----
LDH2 (IN)	----	----	----	----	----	----

TRANS-DUCER	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC (P) IN PSIA					
10						
P016	0.001	0.002	----	0.002	0.001	0.001
P017	0.001	0.002	----	0.002	0.001	0.001
P018	0.000	----	----	0.001	0.001	0.001
Q001	----	----	3.367	----	3.378	2.068
Q002	1.974	3.396	3.061	3.577	3.397	2.571
Q003	3.271	5.920	----	5.968	4.984	5.914
Q004	5.565	6.453	5.481	6.189	5.497	5.933
Q008	3.387	3.837	5.806	4.602	3.378	4.262
Q009	4.607	4.391	4.710	----	3.291	4.542
Q011	2.797	3.037	2.528	2.894	2.332	2.445
Q013	2.884	2.791	2.903	2.894	2.226	2.223
Q015	3.271	2.585	2.992	2.803	2.449	3.131
Q016	3.136	2.308	2.765	2.562	2.545	2.532
Q019	2.013	1.559	2.330	1.708	1.461	2.194
Q022	0.053	0.055	----	0.063	0.052	0.047
Q023	0.031	0.037	0.044	0.040	0.029	0.041
Q024	0.036	0.043	0.059	0.048	0.033	0.048
Q025	0.094	0.096	0.092	0.100	0.079	0.103
Q031	0.025	0.025	0.034	0.024	0.021	0.032

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CASE ----- RUN SERIES 1, LOG 1.3 AND 1.4

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: FOR COMPARISON OF 210 AND 256 INCH HEAT SHIELDS ON THRUST STRUCTURE HTG.
 TC HEATING RATES AND PRESSURES QUESTIONABLE DUE TO HOT GAS LEAKAGE FROM NOZZLE ADAPTERS. UNEXPL-
 AINED INCREASES OCCURRED ON SOME TC GAGES (USUALLY Q22 AND Q35). 210 INCH HEAT SHIELD & HIGH ALT

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	117	118	119	120	121	122
PC (PSIA)	653.0	616.0	640.0	629.0	653.0	654.0
ALT (MU HG A)	25.0	27.0	27.0	0.7	0.7	2.0
P02 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0	1265.0
T02 (F)	-----	-----	-----	-----	-----	-----
1TH2 (F)	-----	-----	-----	-----	-----	-----
1202 (IN)	-----	-----	-----	-----	-----	-----
127DH2 (IN)	-----	-----	-----	-----	-----	-----

TRANSDUCER	TRANSDUCER OUTPUT					
ID	(Q) IN BTU/SQ-FT-SEC (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC (P) IN PSIA
Q035	0.054	0.045	0.048	-----	0.054	0.064
Q036	0.052	0.045	0.041	-----	0.055	0.072

CASE ----- RUN SERIES 1, LOG 1.5

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE EFFECT OF HIGHER CHAMBER PRESSURE WITH O/F = 5.
 POSSIBLE NOZZLE ADAPTER LEAKAGE FORWARD OF HEAT SHIELD DURING RUN 190. THRUST STRUCTURE DATA
 QUESTIONABLE.

NORMALIZED TEST DATA

RUN NUMBER	184	185	186	187	188	190	191	192	193	195
PC (PSIA)	642.0	651.0	695.0	685.0	701.0	706.0	659.0	642.0	703.0	719.0
ALT (MU HG A)	25.0	22.0	27.0	23.0	25.0	25.0	28.0	28.0	24.0	27.0
PO2 (PSIA)	1265.0	1295.0	1415.0	1415.0	1415.0	1415.0	1415.0	1415.0	1415.0	1415.0
PH2 (PSIA)	1315.0	1345.0	1465.0	1465.0	1465.0	1465.0	1465.0	1465.0	1465.0	1465.0
TO2 (F)	161.0	163.0	170.0	156.0	158.0	156.0	172.0	176.0	148.0	156.0
TH2 (F)	143.0	146.0	155.0	151.0	146.0	143.0	153.0	158.0	130.0	143.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
1 DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

128 TRANSDUCER

TRANSDUCER OUTPUT

10	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	0.001
P016	0.001	0.001	0.002	0.001	0.001	0.001	0.002	0.001	0.001	0.001
P017	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000
P018	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000
Q001	0.958	1.153	0.751	0.992	1.081	0.820	0.911	0.835	0.946	0.935
Q002	2.049	2.680	1.255	2.077	1.601	1.155	1.042	1.225	1.271	1.541
Q003	4.789	4.327	4.712	-----	3.886	2.603	-----	-----	-----	3.490
Q004	5.981	4.679	3.148	-----	5.436	3.929	-----	-----	-----	3.560
Q008	2.673	2.109	1.687	1.785	1.846	2.046	1.378	1.693	1.149	1.581
Q009	3.308	2.987	2.150	2.380	2.468	2.896	2.213	2.339	1.729	1.621
Q011	2.506	2.427	2.438	2.568	2.428	2.319	3.060	2.985	2.553	2.745
Q013	2.695	2.427	2.901	2.683	2.254	1.296	1.769	1.504	2.288	2.745
Q014	1.971	2.625	3.066	2.474	2.142	-----	2.908	3.118	2.370	2.864
Q016	1.916	2.208	2.274	2.265	2.754	2.431	2.387	2.372	2.116	2.307
Q019	1.782	1.944	1.914	1.326	1.622	2.269	1.953	1.927	1.546	1.661
Q022	0.017	0.012	0.017	0.006	-----	-----	0.007	0.009	0.006	0.004
Q023	0.052	0.051	0.052	0.035	0.014	0.024	0.062	0.053	0.058	0.053
Q024	0.066	0.062	0.070	0.056	0.029	0.032	0.088	0.072	0.077	0.073
Q025	0.043	0.037	0.053	0.056	0.025	0.038	0.135	0.106	0.141	0.106
Q030	0.000	-----	0.000	0.000	0.000	-----	-----	0.008	0.000	0.000

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 1, LOG 1.5

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE EFFECT OF HIGHER CHAMBER PRESSURE WITH O/F = 5.
 POSSIBLE NOZZLE ADAPTER LEAKAGE FORWARD OF HEAT SHIELD DURING RUN 190. THRUST STRUCTURE DATA
 QUESTIONABLE.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	184	185	186	187	188	190	191	192	193	195
PC (PSIA)	642.0	651.0	695.0	685.0	701.0	706.0	659.0	642.0	703.0	719.0
ALT (MU HG A)	25.0	22.0	27.0	23.0	25.0	25.0	28.0	28.0	24.0	27.0
P02 (PSIA)	1265.0	1295.0	1415.0	1415.0	1415.0	1415.0	1415.0	1415.0	1415.0	1415.0
PH2 (PSIA)	1315.0	1345.0	1465.0	1465.0	1465.0	1465.0	1465.0	1465.0	1465.0	1465.0
T02 (F)	161.0	163.0	170.0	156.0	158.0	156.0	172.0	176.0	148.0	156.0
1TH2 (F)	143.0	146.0	155.0	151.0	146.0	143.0	153.0	158.0	130.0	143.0
1DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
1DOH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	TRANSDUCER OUTPUT
Q033	0.004	0.010
Q034	0.030	0.033
Q035	0.056	0.058
Q036	0.053	0.058
		0.064
		0.048
		0.032
		0.042
		0.051
		0.038
		0.040
		0.094
		0.017
		0.000
		0.012
		0.032
		0.063
		0.060
		0.055

CASE ----- RUN SERIES 2, LOG 2.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE EFFECT OF HIGHER MIXTURE RATIO AND CHAMBER PRESSURE. LEAK
 FORWARD OF THE HEAT SHIELD OP ZERO SHIFT FROM SPARK NOISE. TC DATA QUESTIONABLE ON RUNS 124-136.
 Q74 HEATED TO MEASURE TR. 0.6 DEG GIMBAL BLOCK ON NOZZLE 3 RUNS 282-285.Q50 @ P17,Q51 @ P15.

NORMALIZED TEST DATA

RUN NUMBER	124	126	128	129	130	131	133	136	282	283	284
PC (PSIA)	708.0	683.0	703.0	709.0	704.0	694.0	715.0	693.0	711.0	700.0	710.0
ALT (MU HG A)	25.0	27.0	27.0	27.0	27.0	27.0	30.0	26.0	27.0	27.0	27.0
P02 (PSIA)	1365.0	1365.0	1365.0	1365.0	1365.0	1365.0	1365.0	1365.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1295.0	1295.0	1295.0	1295.0	1295.0	1295.0	1295.0	1295.0	1235.0	1235.0	1235.0
T02 (F)	----	----	----	----	156.0	165.0	146.0	165.0	172.0	168.0	165.0
TH2 (F)	----	----	----	----	140.0	146.0	135.0	148.0	152.0	146.0	146.0
D02 (IN)	----	----	----	----	----	----	----	----	0.398	0.398	0.398
LDH2 (IN)	----	----	----	----	----	----	----	----	0.335	0.335	0.335

130 TRANSDUCER

ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA										
P001	----	----	----	----	----	----	----	----	----	----	----
P002	----	----	----	----	----	----	----	----	----	----	----
P003	----	----	----	----	----	----	----	----	----	----	----
P005	----	----	----	----	----	----	----	----	----	----	----
P006	----	----	----	----	----	----	----	----	----	----	----
P007	----	----	----	----	----	----	----	----	----	----	----
P008	----	----	----	----	----	----	----	----	----	----	----
P011	----	----	----	----	----	----	----	----	----	----	----
P016	0.002	0.002	0.002	0.002	0.001	0.002	0.002	0.002	0.004	0.004	0.004
P017	0.002	0.001	0.002	0.002	0.001	0.002	0.002	0.001	----	----	----
P018	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.003
Q001	2.828	2.188	2.461	0.787	1.879	2.936	2.690	0.753	----	----	----
Q002	2.575	2.942	3.448	1.845	3.595	3.359	3.970	1.455	----	----	----
Q003	7.251	6.490	5.228	5.456	----	7.356	----	4.725	----	----	----
Q004	7.766	7.255	----	----	----	6.676	----	4.282	4.234	6.200	6.425
Q007	----	----	----	----	----	----	----	----	----	----	----
Q008	5.888	5.496	5.340	4.649	2.742	5.028	6.230	2.445	----	----	----
Q009	6.019	6.302	6.285	6.535	3.473	6.006	7.360	4.529	----	----	----
Q010	----	----	----	----	----	----	----	----	3.831	3.064	3.565

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.1

GIMRAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE EFFECT OF HIGHER MIXTURE RATIO AND CHAMBER PRESSURE. LEAK
 FORWARD OF THE HEAT SHIELD OR ZERO SHIFT FROM SPARK NOISE. TC DATA QUESTIONABLE ON RUNS 124-136.
 Q7H HEATED TO MEASURE TR. 0.6 DEG GIMRAL BLOCK ON NOZZLE 3 RUNS 282-285.050 @ P17,Q51 @ P15.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	124	126	128	129	130	131	133	136	282	283	284
PC (PSIA)	708.0	683.0	703.0	709.0	704.0	694.0	715.0	693.0	711.0	700.0	710.0
ALT (MU HG A)	25.0	27.0	27.0	27.0	27.0	27.0	30.0	26.0	27.0	27.0	27.0
P02 (PSIA)	1365.0	1365.0	1365.0	1365.0	1365.0	1365.0	1365.0	1365.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1295.0	1295.0	1295.0	1295.0	1295.0	1295.0	1295.0	1295.0	1235.0	1235.0	1235.0
T02 (F)	-----	-----	-----	-----	156.0	165.0	146.0	165.0	172.0	168.0	165.0
TH2 (F)	-----	-----	-----	-----	140.0	146.0	135.0	148.0	152.0	146.0	146.0
ID02 (IN)	-----	-----	-----	-----	-----	-----	-----	-----	0.398	0.398	0.398
TDH2 (IN)	-----	-----	-----	-----	-----	-----	-----	-----	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT

ID	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA
Q011	2.939	2.376	3.061	3.217	3.656	3.060	2.520	1.661	-----	-----	-----
Q013	2.626	3.444	3.234	-----	2.712	2.967	2.180	2.094	-----	-----	-----
Q015	2.424	3.308	3.529	4.034	-----	3.008	4.860	2.868	-----	-----	-----
Q017	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Q019	2.303	3.109	2.909	2.592	1.757	2.421	3.190	3.054	-----	-----	-----
Q022	0.059	0.067	0.076	0.071	0.144	0.045	0.063	0.080	0.026	0.010	0.011
Q023	0.034	0.031	0.028	0.034	0.035	0.030	0.032	0.030	0.041	0.068	0.058
Q024	0.041	0.049	0.034	0.042	0.038	0.028	0.035	0.032	0.060	0.085	0.089
Q025	0.070	0.064	0.067	0.084	0.071	0.069	0.071	0.072	0.096	0.169	0.168
Q030	-----	-----	-----	-----	-----	-----	-----	-----	0.013	0.008	0.008
Q031	0.020	0.019	0.023	0.023	0.020	0.020	0.020	0.025	0.025	0.026	0.031
Q032	-----	-----	-----	-----	-----	-----	-----	-----	0.032	0.055	0.055
Q033	-----	-----	-----	-----	-----	-----	-----	-----	0.014	0.016	0.014
Q034	-----	-----	-----	-----	-----	-----	-----	-----	0.026	0.032	0.030
Q035	0.034	0.030	0.036	0.039	0.042	0.036	0.034	0.032	0.074	0.074	0.070
Q036	0.034	0.025	0.032	0.030	0.037	0.039	0.034	0.031	0.079	0.093	0.089
Q037	-----	-----	-----	-----	-----	-----	-----	-----	0.124	0.121	0.105
Q040	-----	-----	-----	-----	-----	-----	-----	-----	0.034	0.033	0.042
Q041	-----	-----	-----	-----	-----	-----	-----	-----	0.021	-----	0.028
Q050	-----	-----	-----	-----	-----	-----	-----	-----	0.084	0.077	0.116

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE EFFECT OF HIGHER MIXTURE RATIO AND CHAMBER PRESSURE. LEAK
 FORWARD OF THE HEAT SHIELD OR ZERO SHIFT FROM SPARK NOISE. TC DATA QUESTIONABLE ON RUNS 124-136.
 Q7H HEATED TO MEASURE TR. 0.6 DEG GIMBAL BLOCK ON NOZZLE 3 RUNS 282-285.Q50 @ P17,Q51 @ P15.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	124	126	128	129	130	131	133	136	282	283	284
PC (PSIA)	708.0	683.0	703.0	709.0	704.0	694.0	715.0	693.0	711.0	700.0	710.0
ALT (MU HG A)	25.0	27.0	27.0	27.0	27.0	27.0	30.0	26.0	27.0	27.0	27.0
PO2 (PSIA)	1365.0	1365.0	1365.0	1365.0	1365.0	1365.0	1365.0	1365.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1295.0	1295.0	1295.0	1295.0	1295.0	1295.0	1295.0	1295.0	1235.0	1235.0	1235.0
T02 (F)	----	----	----	----	156.0	165.0	146.0	165.0	172.0	168.0	165.0
1TH2 (F)	----	----	----	----	140.0	146.0	135.0	148.0	152.0	146.0	146.0
1DD2 (IN)	----	----	----	----	----	----	----	----	0.398	0.398	0.398
13DDH2 (IN)	----	----	----	----	----	----	----	----	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT	
	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	
Q051	----	0.000
Q052	----	0.007
Q07H	----	6.680
T07H	----	100.563
	----	102.143
	----	100.704

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE EFFECT OF HIGHER MIXTURE RATIO AND CHAMBER PRESSURE. LEAK
 FORWARD OF THE HEAT SHIELD OR ZERO SHIFT FROM SPARK NOISE. TC DATA QUESTIONABLE ON RUNS 124-136.
 Q7H HEATED TO MEASURE TR. 0.6 DEG GIMBAL BLOCK ON NOZZLE 3 RUNS 282-285.Q50 @ P17.Q51 @ P15.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	285	291	292	337	338	339	340	341	342
PC (PSIA)	720.0	689.0	689.0	682.0	661.0	688.0	681.0	704.0	704.0
ALT (MU HG A)	27.0	26.0	24.0	30.0	27.0	26.0	30.0	27.0	31.0
PD2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
TC2 (F)	164.0	170.0	162.0	170.0	165.0	164.0	161.0	161.0	155.0
ITH2 (F)	150.0	150.0	142.0	150.0	145.0	146.0	146.0	146.0	140.0
13002 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398
13002 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT

ID	(Q) IN	BTU/SQ-FT-SEC, (P)	IN PSIA	(Q) IN	BTU/SQ-FT-SEC, (P)	IN PSIA	(Q) IN	BTU/SQ-FT-SEC, (P)	IN PSIA
P001	---	---	---	0.025	0.024	0.023	0.023	0.024	0.025
P002	---	---	---	0.031	0.032	0.027	0.026	0.034	0.036
P003	---	---	---	0.032	0.035	0.031	0.031	0.031	0.036
P005	---	---	---	0.032	0.035	0.031	0.031	0.028	0.032
P006	---	---	---	0.031	0.031	0.033	0.031	0.030	0.035
P007	---	---	---	0.029	0.027	0.030	0.034	0.032	0.030
P008	---	---	---	0.021	---	0.031	0.024	0.020	0.021
P011	---	---	---	0.031	---	0.029	0.033	0.036	0.035
P016	---	0.003	0.004	---	---	---	---	---	---
P017	---	---	---	---	---	---	---	---	---
P018	---	0.002	0.003	---	---	---	---	---	---
Q001	---	1.723	1.328	0.933	0.822	1.642	1.323	0.650	0.650
Q002	---	4.130	3.881	2.013	2.207	2.785	2.373	1.584	2.895
Q003	---	---	3.881	3.565	3.299	4.199	---	3.372	3.179
Q004	4.965	6.486	5.531	---	4.695	5.477	4.557	4.621	5.505
Q007	---	---	---	1.457	2.207	1.580	1.722	1.645	1.716
Q008	---	---	---	3.533	2.866	4.947	3.202	3.870	2.488
Q009	---	4.338	4.307	3.051	3.267	4.884	3.234	4.225	3.402
Q010	3.654	---	---	---	---	---	---	---	---

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO EVALUATE EFFECT OF HIGHER MIXTURE RATIO AND CHAMBER PRESSURE. LEAK
 FORWARD OF THE HEAT SHIELD OR ZERO SHIFT FROM SPARK NOISE. TC DATA QUESTIONABLE ON RUNS 124-136.
 Q7H HEATED TO MEASURE TR. 0.6 DEG GIMBAL BLOCK ON NOZZLE 3 RUNS 282-285.050 @ P17,Q51 @ P15.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	285	291	292	337	338	339	340	341	342
PC (PSIA)	720.0	689.0	689.0	682.0	661.0	688.0	681.0	704.0	704.0
ALT (MU HG A)	27.0	26.0	24.0	30.0	27.0	26.0	30.0	27.0	31.0
P02 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
T02 (F)	164.0	170.0	162.0	170.0	165.0	164.0	161.0	161.0	155.0
ITH2 (F)	150.0	150.0	142.0	150.0	145.0	146.0	146.0	146.0	140.0
P002 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398
P00H2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

TRANSducer OUTPUT
 (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

ID	Q011	Q013	Q015	Q017	Q019	Q022	Q023	Q024	Q025	Q030	Q031	Q032	Q033	Q034	Q035	Q036	Q037	Q040	Q041	Q050
	2.916	3.912	-----	-----	-----	0.016	0.066	0.092	0.155	0.010	0.031	0.061	0.014	0.030	0.070	0.087	0.111	0.042	0.050	0.178
	2.812	3.310	-----	-----	-----	0.024	0.077	0.104	0.194	0.011	0.029	0.060	-----	0.052	0.084	0.098	-----	-----	-----	-----
	2.802	3.083	3.260	0.734	2.359	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	3.378	4.552	4.136	0.821	3.856	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	3.128	3.270	2.772	0.777	1.596	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	2.925	3.209	2.803	0.680	1.737	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

(TABLE CONTINUED ON THE NEXT PAGE)

CASE -----

GIMBAL PATTERN	---	NO DEFLECTION	MIXTURE RATIO	---	5.50
NOMINAL PC	-----	715.0 PSIA	INTERSTAGE	-----	OFF

REMARKS: TO EVALUATE EFFECT OF HIGHER MIXTURE RATIO AND CHAMBER PRESSURE. LEAK FORWARD OF THE HEAT SHIELD OR ZERO SHIFT FROM SPARK NOISE. TC DATA QUESTIONABLE ON RUNS 124-136. Q7H HEATED TO MEASURE TR. 0.6 DEG GIMBAL BLOCK ON NOZZLE 3 RUNS 282-285.Q50 @ P17,Q51 @ P15.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

[illegible]

TRANSDUCER

TRANSDUCER OUTPUT

ID	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA
0.005	
Q051	
Q052	
Q07H	
Y07H	

CASE ----- RUN SERIES 2, LOG 2.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 4.50
 NOMINAL PC ----- 546.0 PSIA INTERSTAGE ----- OFF

REMARKS: EVALUATION OF LOW O/F AND PC. THRUST STRUCTURE DATA QUESTIONABLE RUNS
 139-168 DUE TO APPARENT NOZZLE ADAPTER LEAKAGE FWD OF HEAT SHIELD. NO 3 ENG NOZZLE ADAPTER RE-
 PLACED BY 0.6 DEG GIMBAL ADAPTER DUE TO LEAKAGE RUNS 293-298. PREMATURE FLOW RUNS 333,335,336.

NORMALIZED TEST DATA

RUN NUMBER	139	142	144	159	160	161	163	165	166	167	168
PC (PSIA)	651.0	624.0	587.0	601.0	594.0	544.0	496.0	480.0	526.0	491.0	497.0
ALT (MU HG A)	27.0	25.0	28.0	26.0	27.0	-----	26.0	22.0	25.0	20.0	27.0
PD2 (PSIA)	1015.0	990.0	-----	1190.0	1165.0	1015.0	1015.0	1015.0	1090.0	1090.0	1090.0
PH2 (PSIA)	1175.0	1147.0	-----	1190.0	1165.0	1015.0	1015.0	1015.0	1090.0	1090.0	1090.0
T02 (F)	152.0	118.0	-----	176.0	172.0	160.0	162.0	-----	163.0	167.0	166.0
TH2 (F)	126.0	104.0	-----	152.0	148.0	140.0	140.0	-----	142.0	145.0	143.0
D02 (IN)	-----	-----	-----	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361
IDH2 (IN)	-----	-----	-----	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

136 TRANSDUCER

ID	(Q) IN BTU/SQ-FT-SEC.	(P) IN PSIA	TRANSDUCER OUTPUT
P001	-----	-----	-----
P002	-----	-----	-----
P003	-----	-----	-----
P005	-----	-----	-----
P006	-----	-----	-----
P007	-----	-----	-----
P008	-----	-----	-----
P011	-----	-----	-----
P016	0.001	0.001	0.001
P017	0.000	0.001	0.001
P018	0.001	0.000	0.000
Q001	0.721	1.826	1.716
Q002	1.359	2.980	2.178
Q003	4.311	5.233	5.119
Q004	2.399	4.479	4.968
Q007	-----	-----	-----
Q008	2.097	3.843	3.362
Q009	2.743	3.943	3.673
Q011	1.375	1.653	2.088

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 4.50
 NOMINAL PC ----- 546.0 PSIA INTERSTAGE ----- OFF

REMARKS: EVALUATION OF LOW O/F AND PC. THRUST STRUCTURE DATA QUESTIONABLE RUNS
 139-168 DUE TO APPARENT NOZZLE ADAPTER LEAKAGE FWD OF HEAT SHIELD. NO 3 ENG NOZZLE ADAPTER RE-
 PLACED BY 0.6 DEG GIMBAL ADAPTER DUE TO LEAKAGE RUNS 293-298. PREMATURE FLOW RUNS 333,335,336.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	139	142	144	159	160	161	163	165	166	167	168
PC (PSIA)	651.0	624.0	587.0	601.0	594.0	544.0	496.0	480.0	526.0	491.0	497.0
ALT (MU HG A)	27.0	25.0	28.0	26.0	27.0	-----	26.0	22.0	25.0	20.0	27.0
PO2 (PSIA)	1015.0	990.0	-----	1190.0	1165.0	1015.0	1015.0	1015.0	1090.0	1090.0	1090.0
PH2 (PSIA)	1175.0	1147.0	-----	1190.0	1165.0	1015.0	1015.0	1015.0	1090.0	1090.0	1090.0
TO2 (F)	152.0	118.0	-----	176.0	172.0	160.0	162.0	-----	163.0	167.0	166.0
TH2 (F)	126.0	104.0	-----	152.0	148.0	140.0	140.0	-----	142.0	145.0	143.0
PO2 (IN)	-----	-----	-----	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361
PH2 (IN)	-----	-----	-----	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT

(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

ID	1.602	1.225	1.870	1.744	1.848	2.088	-----	2.844	2.190	2.002	2.670
Q013	1.627	2.117	3.181	2.671	1.682	1.947	3.963	2.707	3.291	3.492	3.856
Q015	1.728	1.382	1.665	1.853	1.636	2.017	2.356	2.207	2.201	1.946	2.746
Q016	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Q017	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Q019	1.334	1.330	1.804	1.699	1.416	1.345	2.752	1.536	2.273	2.124	-----
Q022	0.032	0.051	0.065	0.041	0.053	0.058	0.062	0.065	0.075	0.063	-----
Q023	0.018	0.017	0.020	0.012	0.023	0.018	0.026	0.024	0.021	0.057	0.018
Q024	0.014	0.017	0.019	0.012	0.024	0.025	0.029	0.026	0.021	0.054	0.020
Q025	0.043	0.034	0.026	0.043	0.050	0.042	0.043	0.043	0.039	-----	0.036
Q030	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Q031	0.014	0.016	0.016	-----	0.013	0.010	0.011	0.009	0.000	-----	0.009
Q032	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Q033	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Q034	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Q035	0.018	0.016	0.011	0.024	0.026	0.026	0.020	0.019	0.016	0.029	0.022
Q036	0.009	0.016	0.006	0.024	0.015	0.023	0.017	0.022	0.016	0.004	0.022
Q037	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Q041	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Q052	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 4.50
 NOMINAL PC ----- 546.0 PSIA INTERSTAGE ----- OFF

REMARKS: EVALUATION OF LOW O/F AND PC. THRUST STRUCTURE DATA QUESTIONABLE RUNS
 139-168 DUE TO APPARENT NOZZLE ADAPTER LEAKAGE FWD OF HEAT SHIELD. NO 3 ENG NOZZLE ADAPTER RE-
 PLACED BY 0.6 DEG GIMBAL ADAPTER DUE TO LEAKAGE RUNS 293-298. PREMATURE FLOW RUNS 333,335,336.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	293	294	295	296	297	298	331	332	333	334	335
PC (PSIA)	500.0	511.0	511.0	522.0	503.0	503.0	541.0	531.0	575.0	531.0	511.0
ALT (MU HG A)	27.0	26.0	25.0	27.0	27.0	27.0	26.0	27.0	27.0	26.0	27.0
P02 (PSIA)	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1085.0	1090.0	1090.0
PH2 (PSIA)	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0
T02 (F)	168.0	171.0	170.0	160.0	158.0	165.0	163.0	154.0	152.0	155.0	155.0
TH2 (F)	150.0	151.0	145.0	145.0	140.0	138.0	146.0	137.0	139.0	140.0	138.0
PH02 (IN)	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.388	0.361	0.361
PH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID (O) IN BTU/SQ-FT-SEC, (P) IN PSIA

TRANSDUCER ID	0.002	0.001	0.002	0.001	0.000	0.000	0.017	0.017	0.017	0.016	0.018
P001	---	---	---	---	---	---	0.017	0.017	0.017	0.016	0.018
P002	---	---	---	---	---	---	0.027	0.026	0.021	0.024	0.026
P003	---	---	---	---	---	---	0.023	0.023	0.018	0.019	0.022
P005	---	---	---	---	---	---	0.023	0.020	0.020	0.023	0.021
P006	---	---	---	---	---	---	0.021	0.024	0.023	0.024	0.025
P007	---	---	---	---	---	---	0.018	0.021	0.017	0.023	0.026
P008	---	---	---	---	---	---	---	0.020	0.019	0.016	0.017
P011	---	---	---	---	---	---	---	0.024	0.019	0.020	0.024
P016	0.002	0.001	0.002	0.002	0.001	0.002	---	---	---	---	---
P017	---	---	---	---	---	---	---	---	---	---	---
P018	0.000	0.001	0.002	0.001	0.000	0.000	---	---	---	---	---
Q001	1.856	3.355	1.239	1.098	1.031	2.084	0.434	1.203	0.541	0.504	0.534
Q002	4.150	5.236	3.815	2.385	1.780	4.071	0.696	---	0.950	0.689	0.833
Q003	---	6.144	5.193	3.483	3.669	5.319	2.301	4.113	1.766	---	---
Q004	4.936	4.787	6.304	5.429	---	5.069	3.310	4.257	3.257	---	2.137
Q007	---	---	---	---	---	---	1.645	1.306	1.168	1.584	1.218
Q008	---	---	---	---	---	---	1.807	2.252	2.118	1.614	1.784
Q009	4.630	4.392	4.231	4.184	3.875	2.692	2.432	1.522	2.440	1.758	1.784
Q011	---	1.175	1.795	---	1.758	0.977	2.594	2.601	2.345	2.242	---

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 4.50
 NOMINAL PC ----- 546.0 PSIA INTERSTAGE ----- OFF

REMARKS: EVALUATION OF LOW O/F AND PC. THRUST STRUCTURE DATA QUESTIONABLE RUNS 139-168 DUE TO APPARENT NOZZLE ADAPTER LEAKAGE FWD OF HEAT SHIELD. NO 3 ENG NOZZLE ADAPTER REPLACED BY 0.6 DEG GIMBAL ADAPTER DUE TO LEAKAGE RUNS 293-298. PREMATURE FLOW RUNS 333,335,336.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	293	294	295	296	297	298	331	332	333	334	335
PC (PSIA)	500.0	511.0	511.0	522.0	503.0	503.0	541.0	531.0	575.0	531.0	511.0
ALT (MU HG A)	27.0	26.0	25.0	27.0	27.0	27.0	26.0	27.0	27.0	26.0	27.0
PO2 (PSIA)	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1085.0	1090.0	1090.0
PH2 (PSIA)	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0	1090.0
1Y02 (F)	168.0	171.0	170.0	160.0	158.0	165.0	163.0	154.0	152.0	155.0	155.0
1TH2 (F)	150.0	151.0	145.0	145.0	140.0	138.0	146.0	137.0	139.0	140.0	138.0
139002 (IN)	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.388	0.361	0.361
1PH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID (Q) IN RTU/SQ-FT-SEC, (P) IN PSIA

ID	0013	0015	0016	0017	0019	0022	0023	0024	0025	0030	0031	0032	0033	0034	0035	0036	0037	0041	0052
1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624	1.624
1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923	1.923
0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016	0.016
0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053
0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073	0.073
0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150	0.150
0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021
0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026
0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048
0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057	0.057
0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058
0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026	0.026
0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022
0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049
0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055
0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060
0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066	0.066
0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.018
0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797	0.797
0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598	0.598
0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874	0.874
0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844	0.844

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 4.50
NOMINAL PC ----- 546.0 PSIA INTERSTAGE ----- OFF

REMARKS: EVALUATION OF LOW O/F AND PC. THRUST STRUCTURE DATA QUESTIONABLE RUNS 139-168 DUE TO APPARENT NOZZLE ADAPTER LEAKAGE FWD OF HEAT SHIELD. NO 3 ENG NOZZLE ADAPTER REPLACED BY 0.6 DEG GIMBAL ADAPTER DUE TO LEAKAGE RUNS 293-298. PREMATURE FLOW RUNS 333,335,336.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	336
PC (PSIA)	511.0
ALT (MU HG A)	27.0
P02 (PSIA)	1090.0
PH2 (PSIA)	1090.0
PT02 (F)	164.0
140TH2 (F)	144.0
PD02 (IN)	0.361
PH2 (IN)	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA
---------------	--

P001	0.019
P002	0.026
P003	0.028
P005	0.024
P006	0.025
P007	0.024
P008	0.015
P011	0.028
P016	-----
P017	-----
P018	-----
Q001	0.684
Q002	1.079
Q003	2.415
Q004	3.419
Q007	1.421
Q008	1.795
Q009	1.795
Q011	2.393

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 4.50
NOMINAL PC ----- 546.0 PSIA INTERSTAGE ----- OFF

REMARKS: EVALUATION OF LOW O/F AND PC. THRUST STRUCTURE DATA QUESTIONABLE RUNS
139-168 DUE TO APPARENT NOZZLE ADAPTER LEAKAGE FWD OF HEAT SHIELD. NO 3 ENG NOZZLE ADAPTER RE-
PLACED BY 0.6 DEG GIMBAL ADAPTER DUE TO LEAKAGE RUNS 293-298. PREMATURE FLOW RUNS 333,335,336.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	336
PC (PSIA)	511.0
ALT (MU HG A)	27.0
PO2 (PSIA)	1090.0
PH2 (PSIA)	1090.0
TO2 (F)	164.0
ITH2 (F)	144.0
LOO2 (IN)	0.361
LOH2 (IN)	0.335

TRANSUDUCER OUTPUT
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

ID	0013	2.233
	0015	1.710
	0016	2.105
	0017	0.662
	0019	1.047
	0022	-----
	0023	-----
	0024	-----
	0025	-----
	0030	-----
	0031	-----
	0032	-----
	0033	-----
	0034	-----
	0035	-----
	0036	-----
	0037	-----
	0041	-----
	0052	1.581

CASE ----- RUN SERIES 2, LOG 2.3

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EVALUATION OF INCREASED MIXTURE RATIO WITH INTERSTAGE SKIRT IN PLACE

NORMALIZED TEST DATA

RUN NUMBER	152	153	154	157	158
PC (PSIA)	672.0	693.0	693.0	697.0	683.0
ALT (MU HG A)	29.0	26.0	24.0	25.0	26.0
PO2 (PSIA)	1365.0	1365.0	1365.0	1365.0	1365.0
PH2 (PSIA)	1295.0	1295.0	1295.0	1295.0	1295.0
TO2 (F)	156.0	153.0	160.0	152.0	168.0
TH2 (F)	134.0	136.0	141.0	131.0	148.0
DO2 (IN)	-----	-----	-----	-----	-----
IOH2 (IN)	-----	-----	-----	-----	-----

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TRANSDUCER

(Q) IN RTU/SQ-FT-SEC, (P) IN PSTA

P016	0.031	-----	0.031	0.028	-----	0.030	0.030	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
P017	0.029	-----	0.030	0.023	-----	0.030	0.030	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
P018	0.032	0.029	0.024	0.030	-----	0.024	0.030	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q001	2.405	2.022	1.517	2.062	-----	1.517	2.062	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q002	4.107	3.178	2.239	2.954	-----	2.239	2.954	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q003	6.118	6.139	5.014	4.585	-----	5.014	4.585	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q004	5.639	6.366	4.127	4.883	-----	4.127	4.883	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q008	3.469	5.458	4.240	4.452	-----	4.240	4.452	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q009	3.469	5.097	4.994	4.678	-----	4.994	4.678	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q011	2.851	3.157	3.085	2.277	-----	3.085	2.277	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q013	3.296	2.363	2.796	2.318	-----	2.796	2.318	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q015	3.745	5.252	3.539	3.734	-----	3.539	3.734	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q016	3.745	3.766	2.951	3.190	-----	2.951	3.190	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q019	2.543	3.890	3.137	2.872	-----	3.137	2.872	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q022	0.298	0.371	0.268	0.215	-----	0.268	0.215	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q023	1.458	1.094	0.836	0.903	-----	0.836	0.903	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q024	1.458	1.826	0.691	0.657	-----	0.691	0.657	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q025	0.255	0.495	0.444	0.226	-----	0.444	0.226	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879
Q031	0.585	0.877	0.856	0.369	-----	0.856	0.369	0.035	1.078	2.020	4.836	5.779	3.182	5.025	3.172	2.774	3.737	3.654	2.847	0.440	1.047	1.120	0.502	0.879

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.3

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EVALUATION OF INCREASED MIXTURE RATIO WITH INTERSTAGE SKIRT IN PLACE

NORMALIZED TEST DATA
 (CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	152	153	154	157	158
PC (PSIA)	672.0	693.0	693.0	697.0	683.0
ALT (MU HG A)	29.0	26.0	24.0	25.0	26.0
PO2 (PSIA)	1365.0	1365.0	1365.0	1365.0	1365.0
PH2 (PSIA)	1295.0	1295.0	1295.0	1295.0	1295.0
TO2 (F)	156.0	153.0	160.0	152.0	168.0
TH2 (F)	134.0	136.0	141.0	131.0	148.0
PO2 (IN)	-----	-----	-----	-----	-----
TH2 (IN)	-----	-----	-----	-----	-----
PO2 (IN)	-----	-----	-----	-----	-----
TH2 (IN)	-----	-----	-----	-----	-----
TRANSDUCER ID	TRANSDUCER OUTPUT				
Q035	0.936	0.268	1.321	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	
Q036	0.936	0.836	1.352		

CASE ----- RUN SERIES 2, LOG 2.4

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

DEFLECTIONS REMARKS: TO DETERMINE THE EFFECT OF INCREASED MIXTURE RATIO WITH LARGE ENGINE

NORMALIZED TEST DATA

RUN NUMBER	196	197	198	199	200	202	203	204	205
PC (PSIA)	658.0	652.0	679.0	684.0	690.0	700.0	676.0	691.0	702.0
ALT (MU HG A)	27.0	25.0	26.0	24.0	25.0	28.0	27.0	35.0	26.0
PO2 (PSIA)	1365.0	1295.0	1365.0	1390.0	1415.0	1415.0	1415.0	1415.0	1415.0
PH2 (PSIA)	1295.0	1295.0	1365.0	1390.0	1415.0	1415.0	1415.0	1415.0	1415.0
TO2 (F)	148.0	143.0	150.0	154.0	163.0	153.0	143.0	153.0	151.0
TH2 (F)	131.0	127.0	132.0	136.0	147.0	138.0	128.0	140.0	141.0
DO2 (IN)	0.338	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	TRANSDUCER OUTPUT
P018	0.000	0.000
Q002	4.387	4.218
Q003	9.431	7.569
Q004	-----	6.946
Q008	13.445	12.696
Q009	9.924	9.622
Q010	32.592	35.607
Q011	6.832	6.844
Q013	5.373	3.892
Q014	14.377	22.328
Q015	9.845	8.756
Q016	9.106	9.688
Q017	5.433	8.440
Q018	4.292	5.710
Q019	5.433	5.523
Q023	0.049	0.055
Q024	0.061	0.047
Q025	0.084	0.074
Q030	0.020	0.011

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 2, LOG 2.4

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE THE EFFECT OF INCREASED MIXTURE RATIO WITH LARGE ENGINE DEFLECTIONS

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	196	197	198	199	200	202	203	204	205
PC (PSIA)	658.0	652.0	679.0	684.0	690.0	700.0	676.0	691.0	702.0
ALT (MU HG A)	27.0	25.0	26.0	24.0	25.0	28.0	27.0	35.0	26.0
P02 (PSIA)	1365.0	1295.0	1365.0	1390.0	1415.0	1415.0	1415.0	1415.0	1415.0
PH2 (PSIA)	1295.0	1295.0	1365.0	1390.0	1415.0	1415.0	1415.0	1415.0	1415.0
Y02 (F)	148.0	143.0	150.0	154.0	163.0	153.0	143.0	153.0	151.0
YTH2 (F)	131.0	127.0	132.0	136.0	147.0	138.0	128.0	140.0	141.0
LD02 (IN)	0.338	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398
LDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT

ID	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA
Q032	0.041	0.063	0.046
Q052	7.271	7.271	8.530

REMARKS: PC INDICATES STEADY FLOW, HOWEVER, O/F UNCERTAIN SINCE VENTURI FLO VARIED WITH TIME & DETONATION RUPTURED NOZ. DIAPHRAGMS AT START OF COMBUSTION RNS 255,258,259,261. HEAT-ED COMP Q7H REPLACED Q7. Q50 @ P17 LOC. FACING P16 RNS 258-260, FACING P18 RNS 261-263

[illegible]

TRANSDUCER OUTPUT

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 3, LOG 3.1 (Q51 @ P15 FACING OUTBD)

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: PC INDICATES STEADY FLOW, HOWEVER, O/F UNCERTAIN SINCE VENTURI FLO VARIED
 WITH TIME & DETONATION RUPTURED NOZ. DIAPHRAGMS AT START OF COMBUSTION RNS 255,258,259,261. HEAT
 -ED COMP Q7H REPLACED Q7. Q50 @ P17 LOC. FACING P16 RNS 258-260, FACING P18 RNS 261-263

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	253	254	255	256	257	258	259	260	261	262	263
PC (PSIA)	647.0	641.0	575.0	619.0	597.0	569.0	605.0	611.0	572.0	605.0	628.0
ALT (MU HG A)	24.0	26.0	-----	26.0	25.0	27.0	15.0	15.0	15.0	15.0	15.0
P02 (PSIA)	1120.0	1415.0	1315.0	1315.0	1315.0	1315.0	1315.0	1315.0	1315.0	1315.0	1345.0
PH2 (PSIA)	1203.0	1405.0	1305.0	1305.0	1305.0	1305.0	1305.0	1305.0	1305.0	1305.0	1335.0
T02 (F)	166.0	160.0	168.0	165.0	168.0	170.0	166.0	163.0	165.0	167.0	166.0
TH2 (F)	145.0	146.0	145.0	146.0	148.0	148.0	144.0	143.0	145.0	146.0	146.0
P002 (IN)	0.388	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335
PH2H2 (IN)	0.326	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291

TRANSDUCER

ID	(Q) IN BTU/SQ-FT-SEC	(P) IN PSIA	TRANSducer OUTPUT
Q050	-----	-----	-----
Q051	0.025	0.006	0.138
Q07H	3.497	2.083	0.016
T07H	107.450	100.568	3.232
			2.131
			2.876
			3.928
			103.418
			100.637

CASE

RUN SERIES 3.1A

CASE	-----	RUN SERIES 3.1A		
GIMBAL PATTERN	---	3CA	MIXTURE RATIO	5.00
NOMINAL PC	-----	632.0 PSIA	INTERSTAGE	OFF

REMARKS: Q7 REPLACED BY HEATED COMPONENT Q7H. ROD GAGES Q50 & Q51 ON THE THRUST CONE AT P17 AND P15 LOCATION RESPECTIVELY RUNS 454-458, AT P15 AND P17 RESPECTIVELY RUNS 459-461

NORMALIZED TEST DATA

[illegible]

1400 TRANSDUCER

TRANSDUCER OUTPUT

[illegible]

CASE ----- RUN SERIES 3, LOG 3.2A (Q50 @ P17, Q51 @ P15 RNS 470-473)

GIMBAL PATTERN --- 3CA MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: ATTEMPT TO DETERMINE RECOVERY TEMPERATURE FOR LARGE DEFLECTIONS. Q7H
 DATA QUESTIONABLE DUE TO POORLY DEFINED GAGE PROPERTIES AT HIGH TEMP. Q51 DATA WHEN INSTALLED AT
 P15 WAS POOR, READINGS REPORTED GENERALLY LESS THAN THE NOISE LEVEL. Q50@P15, Q51@P17 RNS 463-469

NORMALIZED TEST DATA

RUN NUMBER	463	464	465	466	467	468	469	470	471	472	473
PC (PSIA)	630.0	600.0	609.0	614.0	600.0	601.0	616.0	600.0	589.0	608.0	630.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
PD2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0
TD2 (F)	170.0	142.0	168.0	167.0	166.0	166.0	162.0	170.0	162.0	172.0	162.0
TH2 (F)	153.0	133.0	156.0	153.0	151.0	150.0	150.0	150.0	145.0	154.0	146.0
PD2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
IDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

149 TRANSDUCER

TRANSducer OUTPUT

	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA										
P016	0.002	0.002	0.002	0.002	0.003	0.002	0.002	----	0.002	0.002	0.002
P018	0.001	0.001	0.001	0.001	0.001	0.001	0.001	----	0.000	0.001	0.001
Q022	0.014	0.024	----	0.024	0.017	0.030	0.019	0.012	0.020	0.021	0.011
Q023	0.054	0.064	0.066	0.063	0.064	0.067	0.065	0.059	0.069	0.062	0.046
Q024	0.072	0.095	0.097	0.112	0.098	0.099	0.085	0.088	0.092	0.087	0.073
Q025	0.181	0.226	0.219	0.184	0.211	0.222	0.192	0.194	0.205	0.197	0.190
Q030	0.012	0.015	0.011	0.015	0.005	0.013	0.014	0.013	0.010	0.012	0.013
Q031	0.019	0.017	0.030	0.028	0.035	0.017	0.018	0.009	0.016	0.018	0.019
Q032	0.029	0.031	0.039	0.037	0.046	0.038	0.034	0.036	0.032	0.032	0.028
Q033	0.001	0.002	0.009	0.002	0.001	0.008	0.004	0.009	0.003	0.007	0.007
Q034	0.011	0.011	0.012	0.011	0.011	0.015	0.012	0.014	0.011	0.010	0.015
Q036	0.021	0.044	0.048	0.046	0.047	0.047	0.043	0.023	0.073	0.021	0.072
Q037	0.013	0.058	0.052	0.024	0.021	0.083	0.053	0.084	0.059	0.041	0.041
Q040	0.008	0.013	0.011	0.020	0.011	0.040	0.022	----	0.011	0.010	0.007
Q041	0.011	0.015	0.020	0.009	0.018	0.016	0.015	0.040	0.038	0.033	0.031
Q050	0.062	0.098	0.083	0.079	0.092	0.076	0.097	0.047	0.078	0.057	0.055
Q051	-----	0.008	0.008	-----	0.011	0.005	0.003	0.025	0.017	0.016	0.016
Q07H	10.614	13.799	12.138	11.024	14.357	16.299	13.738	12.187	12.833	12.941	11.958
T07H	501.587	832.133	830.213	1029.316	1053.333	1051.580	1025.973	1053.333	1073.005	1039.473	1003.174

CASE ----- RUN SERIES 3, LOG 3.3

GIMRAL PATTERN --- 3C MIXTURE RATIO ----- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: Q7 REPLACED BY HEATED COMPONENT Q7H. ROD GAGES Q50 & 51 MOUNTED ON TC.
 THIS SERIES CONSISTS OF 15 RUNS, 8 NOT REPORTED DUE TO POOR COMBURSTOR PERFORMANCE. Q50 AND Q51
 AT P17 AND P15 RESPECTIVELY.

NORMALIZED TEST DATA

RUN NUMBER	272	273	276	277	278	279	280	281
PC (PSIA)	722.0	733.0	726.0	711.0	711.0	717.0	689.0	705.0
ALT (MU HG A)	27.0	24.0	27.0	25.0	25.0	27.0	25.0	27.0
PO2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
TO2 (F)	-----	166.0	170.0	167.0	166.0	166.0	168.0	163.0
TH2 (F)	-----	146.0	150.0	146.0	149.0	144.0	148.0	151.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398
IDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

15 TRANS-DUCER

ID	TRANS-DUCER OUTPUT									
	(Q) IN BTU/SQ-FT-SEC.					(P) IN PSIA				
P016	0.002	0.002	0.002	0.002	0.002	0.004	0.004	0.004	0.004	0.004
P018	0.001	0.000	-----	-----	-----	0.002	0.003	0.003	0.005	0.005
Q004	7.754	7.043	7.455	6.607	7.452	7.479	6.984	6.984	6.988	6.988
Q010	23.015	28.541	28.511	29.113	27.444	27.732	29.098	27.941	27.941	27.941
Q022	0.006	0.020	0.011	0.007	0.009	0.012	0.019	0.012	0.012	0.012
Q023	-----	-----	0.044	0.035	0.042	0.051	0.055	0.049	0.049	0.049
Q024	0.028	0.085	0.065	0.047	0.072	0.066	0.068	0.079	0.079	0.079
Q025	0.077	0.147	0.110	0.106	0.111	0.134	0.137	0.118	0.118	0.118
Q030	-----	0.005	0.006	0.007	0.007	0.007	0.007	0.003	0.003	0.003
Q031	-----	0.019	0.024	0.028	0.024	0.031	0.026	0.019	0.019	0.019
Q032	0.039	0.049	0.049	0.058	0.047	0.064	0.060	0.048	0.048	0.048
Q033	0.010	0.013	0.013	0.014	0.015	0.014	0.024	0.011	0.011	0.011
Q034	0.031	0.028	0.022	0.023	0.027	0.039	0.043	0.022	0.022	0.022
Q035	0.051	0.070	0.055	0.053	0.059	0.059	0.076	0.060	0.060	0.060
Q036	0.044	0.061	0.062	0.063	0.058	0.070	0.066	0.074	0.074	0.074
Q037	0.093	0.095	0.083	0.075	0.076	0.090	0.077	0.084	0.084	0.084
Q040	0.019	0.014	0.026	0.031	0.028	0.028	0.038	0.040	0.040	0.040
Q041	0.112	0.012	0.079	0.016	0.002	0.024	0.023	0.022	0.022	0.022
Q050	0.182	0.108	-----	-----	0.177	0.204	-----	0.316	0.316	0.316

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 3, LOG 3.3

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: Q7 REPLACED BY HEATED COMPONENT Q7H. ROD GAGES Q50 & 51 MOUNTED ON TC.
 THIS SERIES CONSISTS OF 15 RUNS, 8 NOT REPORTED DUE TO POOR COMBUSTOR PERFORMANCE. Q50 AND Q51
 AT P17 AND P15 RESPECTIVELY.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	272	273	276	277	278	279	280	281
PC (PSIA)	722.0	733.0	726.0	711.0	711.0	717.0	689.0	705.0
ALT (MU HG A)	27.0	24.0	27.0	25.0	25.0	27.0	25.0	27.0
P02 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
P02 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
T02 (F)	-----	166.0	170.0	167.0	166.0	166.0	168.0	163.0
T02 (F)	-----	146.0	150.0	146.0	149.0	144.0	148.0	151.0
P002 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398
P002 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID	(Q) IN BTU/SQ-FT-SEC	(P) IN PSIA
Q051	0.000	0.000
Q07H	2.288	5.479
T07H	101.011	101.418

CASE ----- RUN SERIES 3, LOGS 3.3A AND 3.4A

GIMBAL PATTERN --- 3CA MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: HEATED Q7H REPLACES Q7. ROD GAGES Q50 AND Q51 INSTALLED ON THRUST CONE.
T7H TEMPS TABULATED ARE PRETEST GOAL, NO TEST VALUES RECORDED. Q50 & 51 POSN NOT SPECIFIED BUT
APPEAR TO BE AT P17 AND P15 LOCATIONS RESPECTIVELY. DIFF BTWN 3.3A & 3.4A IS THE T7H TEMP DESRD.

NORMALIZED TEST DATA

RUN NUMBER	474	475	476	477	478
PC (PSIA)	685.0	707.0	706.0	690.0	690.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0
P02 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0
T02 (F)	156.0	157.0	158.0	153.0	155.0
TH2 (F)	150.0	150.0	150.0	146.0	150.0
D02 (IN)	0.398	0.398	0.398	0.398	0.398
1 DH2 (IN)	0.335	0.335	0.335	0.335	0.335

152 TRANSDUCER

ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA				
	474	475	476	477	478
P016	0.001	-----	-----	0.001	0.001
P018	0.002	-----	0.001	0.001	0.002
Q022	0.011	0.012	0.001	0.031	0.020
Q023	0.079	0.056	0.064	0.065	0.073
Q024	0.104	0.091	0.095	0.103	0.105
Q025	0.241	0.198	0.232	0.235	0.249
Q030	0.005	0.015	0.010	0.020	0.019
Q031	0.020	0.011	0.016	0.021	0.020
Q032	0.047	0.036	0.046	0.048	0.044
Q033	0.010	0.004	0.011	0.006	0.011
Q034	0.017	0.014	0.015	0.010	0.015
Q036	0.065	0.054	0.001	0.066	0.055
Q037	0.050	0.054	0.055	0.057	0.063
Q040	0.035	0.036	0.031	0.030	0.032
Q041	0.019	0.018	0.015	0.015	0.012
Q050	0.171	0.124	0.102	0.124	0.124
Q051	0.005	0.007	0.010	0.001	0.001
Q07H	-----	6.634	9.257	14.010	9.274
T07H	-----	1011.315	810.198	828.985	828.985

CASE ----- RUN SERIES 3, LOG 3.4

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: Q7 REPLACED BY HEATED COMPONENT Q7H. ROD GAGES Q50 AND Q51 ON THRUST
STRUCTURE APPEAR TO BE LOCATED AT P17 AND P15 LOCATIONS RESPECTIVELY.

NORMALIZED TEST DATA

RUN NUMBER	286	287	288	289	290
PC (PSIA)	706.0	722.0	706.0	694.0	705.0
ALT (MU HG A)	29.0	25.0	24.0	27.0	25.0
P02 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0
T02 (F)	166.0	170.0	170.0	170.0	174.0
TH2 (F)	146.0	151.0	150.0	151.0	155.0
D02 (IN)	0.398	0.398	0.398	0.398	0.398
1DH2 (IN)	0.335	0.335	0.335	0.335	0.335

15-3-TRANSDUCER
ID

TRANSDUCER OUTPUT
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

P016	0.003	0.003	0.004	0.004	0.004
P018	-----	0.002	0.003	0.004	0.003
Q004	5.904	-----	-----	6.120	5.892
Q010	27.780	-----	-----	29.641	33.083
Q022	0.012	0.020	0.014	0.016	0.017
Q023	0.051	0.059	0.049	0.061	0.059
Q024	0.069	0.064	0.065	0.067	0.101
Q025	0.141	0.143	0.131	0.138	0.158
Q030	0.006	0.010	0.006	0.011	0.007
Q031	0.025	0.031	0.026	0.034	0.030
Q032	0.058	0.059	0.050	0.057	0.061
Q033	0.016	0.015	0.010	0.007	0.017
Q034	-----	0.032	0.024	0.026	0.033
Q035	-----	0.067	0.060	0.056	0.068
Q036	0.077	0.081	0.065	0.082	0.071
Q037	0.095	0.121	0.079	0.105	0.090
Q040	0.035	0.037	0.045	0.020	0.042
Q041	0.021	-----	0.020	0.045	0.022
Q050	0.191	0.177	0.173	0.198	0.170

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 3, LOG 3.4

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: Q7 REPLACED BY HEATED COMPONENT Q7H. ROD GAGES Q50 AND Q51 ON THRUST
STRUCTURE APPEAR TO BE LOCATED AT P17 AND P15 LOCATIONS RESPECTIVELY.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	286	287	288	289	290
PC (PSIA)	706.0	722.0	706.0	694.0	705.0
ALT (MU HG A)	29.0	25.0	24.0	27.0	25.0
PD2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0
TD2 (F)	166.0	170.0	170.0	170.0	174.0
1TH2 (F)	146.0	151.0	150.0	151.0	155.0
1DD2 (IN)	0.398	0.398	0.398	0.398	0.398
1SDH2 (IN)	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT				
	(Q) IN BTU/SQ-FT-SEC		(P) IN PSIA		
Q051	0.000	0.000	0.000	0.000	0.009
Q07H	2.426	3.048	1.494	2.789	
T07H	499.114	506.374	813.905	351.922	

CASE ----- RUN SERIES 4, LOG 4.1

GIMBAL PATTERN ---- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DEFINE ENVIRONMENT ON THE EXTERIOR OF AN INOPERATIVE ENGINE NO 5

NORMALIZED TEST DATA

RUN NUMBER	300	301	302
PC (PSIA)	632.0	638.0	623.0
ALT (MU HG A)	27.0	25.0	27.0
PO2 (PSIA)	1271.0	1271.0	1271.0
PH2 (PSIA)	1271.0	1266.0	1271.0
TO2 (F)	167.0	172.0	172.0
TH2 (F)	147.0	155.0	152.0
DO2 (IN)	0.335	0.335	0.335
IDH2 (IN)	0.291	0.291	0.291

155 TRANSDUCER
ID

TRANSducer OUTPUT
(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA

P018	0.000	0.000	0.000
Q0G2	0.600	1.129	0.629
Q0G4	0.960	0.525	1.045
Q0G5	-----	-----	0.730
Q0G6	-----	-----	0.730
Q0G7	0.590	0.495	0.659
Q0G8	0.620	0.565	-----
Q0H1	2.410	-----	2.323
Q0H3	1.110	0.971	1.085
Q0H4	0.950	0.624	0.842
Q0H5	0.960	0.852	0.832
Q0H7	0.710	0.763	0.710
Q0H8	0.710	0.802	0.751
Q0J1	1.960	1.644	1.907
Q0J6	0.750	0.624	0.578
Q0J7	0.430	0.367	0.345
Q0J8	0.840	0.674	0.741
Q0J9	0.840	1.595	0.913
Q0N1	-----	-----	0.568

CASE ----- RUN SERIES 4, LOG 4.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DEFINE ENVIRONMENT ON THE EXTERIOR OF AN INOPERATIVE ENGINE NO 5

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	300	301	302
PC (PSIA)	632.0	638.0	623.0
ALT (MU HG A)	27.0	25.0	27.0
PO2 (PSIA)	1271.0	1271.0	1271.0
PH2 (PSIA)	1271.0	1266.0	1271.0
TO2 (F)	167.0	172.0	172.0
TH2 (F)	147.0	155.0	152.0
DO2 (IN)	0.335	0.335	0.335
DOH2 (IN)	0.291	0.291	0.291

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA		
	300	301	302
QON2	-----	0.783	0.812
QON3	-----	7.776	4.048
QON5	-----	9.213	5.478

CASE ----- RUN SERIES 4, LOG 4.2

GIMBAL PATTERN --- 2 , MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DEFINE ENVIRONMENT OF INOPERATIVE ENGINE NO 3

NORMALIZED TEST DATA

RUN NUMBER	303	304	305	306
PC (PSIA)	665.0	633.0	656.0	645.0
ALT (MU HG A)	27.0	24.0	27.0	24.0
PO2 (PSIA)	1271.0	1271.0	1271.0	1271.0
PH2 (PSIA)	1266.0	1266.0	1266.0	1266.0
TO2 (F)	164.0	171.0	168.0	165.0
TH2 (F)	144.0	150.0	141.0	141.0
DO2 (IN)	0.335	0.335	0.335	0.335
DH2 (IN)	0.291	0.291	0.291	0.291

157 TRANSDUCER

ID	(Q) IN	BTU/SQ-FT-SEC, (P) IN PSIA
P018	0.000	0.000
Q0G2	0.323	0.385
Q0G4	0.342	0.434
Q0G5	0.684	0.482
Q0G6	0.475	0.491
Q0G7	0.456	0.501
Q0G9	0.409	0.453
Q0H1	0.409	0.626
Q0H3	0.485	0.626
Q0H4	0.551	0.000
Q0H5	0.798	0.954
Q0H6	-----	-----
Q0H7	0.931	0.944
Q0H8	1.331	1.435
Q0J1	0.494	0.771
Q0J6	0.618	0.790
Q0J7	0.409	0.530
Q0J8	1.036	0.366
Q0J9	1.293	0.915

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 4, LOG 4.2

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DEFINE ENVIRONMENT OF INOPERATIVE ENGINE NO 3

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	303	304	305	306
PC (PSIA)	665.0	633.0	656.0	645.0
ALT (MU HG A)	27.0	24.0	27.0	24.0
PO2 (PSIA)	1271.0	1271.0	1271.0	1271.0
PH2 (PSIA)	1266.0	1266.0	1266.0	1266.0
TO2 (F)	164.0	171.0	168.0	165.0
TH2 (F)	144.0	150.0	141.0	141.0
POO2 (IN)	0.335	0.335	0.335	0.335
DO2 (IN)	0.291	0.291	0.291	0.291

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA			
	(Q)	(P)	(Q)	(P)
Q0N1	0.000	0.000	-----	-----
Q0N2	0.200	0.240	0.193	0.216
Q0N3	0.000	0.280	0.048	-----
Q0N5	0.203	0.499	0.173	0.110

CASE ----- RUN SERIES 4, LOG 4.2A

GIMBAL PATTERN --- 2A MIXTURE RATIO ----- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NO 2 ENGINE OUT WITH NOZZLE INSTRUMENTED. LOCATION OF EXTERIOR GAGE ROW
 M NOT DEFINED IN DATA FOR THIS RUN. FULL SCALE DISTANCES FWD OF NOZZLE EXIT PLANE ARE
 QM1 (1 INCH), QM6 (16), QM7 (19) AND QM8 (22)

NORMALIZED TEST DATA

RUN NUMBER	358	359	360
PC (PSIA)	683.0	656.0	656.0
ALT (MU HG A)	27.0	27.0	30.0
PO2 (PSIA)	1271.0	1271.0	1271.0
PH2 (PSIA)	1266.0	1266.0	1266.0
TO2 (F)	161.0	167.0	158.0
TH2 (F)	144.0	147.0	143.0
DO2 (IN)	0.335	0.335	0.335
IDH2 (IN)	0.291	0.291	0.291

15 TRANSDUCER

TRANSDUCER OUTPUT
 (Q) IN BTU/SQ-FT-SEC

ID	0.796	0.780	1.127
Q0M1	0.675	0.443	0.559
Q0M6	0.564	0.424	0.472
Q0M7	1.175	0.867	0.819
Q0M8	-----	2.755	4.046
Q001	-----	-----	3.372
Q002	2.350	3.266	3.218
Q003	5.811	4.480	-----
Q004	1.999	2.601	2.033
Q008	2.665	2.890	2.216
Q009	1.934	1.830	2.572
Q010	1.046	1.792	-----
Q011	2.267	2.582	2.331
Q013	1.101	1.021	1.069
Q014	2.415	3.170	2.784
Q015	1.397	1.638	1.590
Q016	1.777	1.965	1.445
Q017	1.009	2.168	1.753
Q019	0.008	0.010	0.000
Q022			

CASE ----- RUN SERIES 4, LOG 4.2A

GIMBAL PATTERN --- 2A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NO 2 ENGINE OUT WITH NOZZLE INSTRUMENTED. LOCATION OF EXTERIOR GAGE ROW
 M NOT DEFINED IN DATA FOR THIS RUN. FULL SCALE DISTANCES FWD OF NOZZLE EXIT PLANE ARE
 QM1 (1 INCH), QM6 (16), QM7 (19) AND QM8 (22)

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	358	359	360
PC (PSIA)	683.0	656.0	656.0
ALT (MU HG A)	27.0	27.0	30.0
P02 (PSIA)	1271.0	1271.0	1271.0
PH2 (PSIA)	1266.0	1266.0	1266.0
T02 (F)	161.0	167.0	158.0
1 TH2 (F)	144.0	147.0	143.0
1 D02 (IN)	0.335	0.335	0.335
6 DH2 (IN)	0.291	0.291	0.291

TRANSDUCER OUTPUT
 (Q) IN RTU/SQ-FT-SEC

TRANSDUCER ID	Q023	Q024	Q025	Q031	Q052
	0.069	0.099	0.177	0.020	3.988
	0.052	0.081	0.159	0.018	3.671
	0.007	0.021	0.059	0.013	3.854

CASE ----- RUN SERIES 4, LOG 4.3

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF BASE ENVIRONMENT WITH A SINGLE 7.5 DEG ACTUATOR
 FAILURE INBOARD ON ENGINE NO 4.
 (RUNS 234 AND 234A LABLED THE SAME)

NORMALIZED TEST DATA

RUN NUMBER	206	207	208	209	234	234
PC (PSIA)	626.0	610.0	611.0	615.0	680.0	621.0
ALT (MU HG A)	22.0	27.0	25.0	26.0	27.0	27.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0	1265.0
TD2 (F)	160.0	163.0	155.0	161.0	170.0	161.0
TH2 (F)	143.0	145.0	132.0	143.0	155.0	146.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.355	0.355	0.355	0.355	0.355	0.355

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TRANS-DUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P018	0.000	0.000	0.000	-----	-----	-----
Q001	-----	-----	-----	6.543	5.323	-----
Q002	4.170	3.958	5.162	4.117	3.867	-----
Q003	7.017	7.957	7.592	8.067	7.999	-----
Q004	5.795	6.040	5.979	6.228	5.595	-----
Q008	9.995	10.558	12.630	11.869	9.471	-----
Q009	7.612	8.921	8.999	8.776	8.039	-----
Q010	19.899	25.757	31.031	31.127	28.756	-----
Q011	6.441	7.170	7.541	8.005	-----	-----
Q013	4.139	4.683	4.737	5.580	-----	-----
Q014	16.830	18.162	15.722	18.395	13.012	-----
Q015	7.269	7.770	8.999	8.529	11.060	-----
Q016	7.077	7.843	8.389	7.820	9.480	-----
Q017	5.381	4.631	4.262	4.347	3.959	-----
Q018	4.725	5.325	4.696	4.850	-----	-----
Q019	4.816	4.838	4.541	4.624	3.550	-----
Q022	-----	-----	-----	-----	0.008	-----
Q023	0.036	0.037	0.037	0.035	-----	-----
Q024	0.042	0.038	0.037	0.042	0.035	-----

(TABLE CONTINUED ON THE NEXT PAGE)

CASE

GIMBAL PATTERN --- 3C

REMARKS: INVESTIGATION

RUN NUMBER	206	207	208	209	234	234
PC (PSIA)	626.0	610.0	611.0	615.0	680.0	621.0
ALT (MU HG A)	22.0	27.0	25.0	26.0	27.0	27.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0	1265.0
TO2 (F)	160.0	163.0	155.0	161.0	170.0	161.0
TH2 (F)	143.0	145.0	132.0	143.0	155.0	146.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
PH2 (IN)	0.355	0.355	0.355	0.355	0.355	0.355

CASE ----- RUN SERIES 4, LOG 4.4

GIMBAL PATTERN --- 4A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: DUAL ACTUATOR FAILURE ON ENGINE NO 3 AT 7.5 DEG WITH 210 INCH HEAT SHIELD . NOTE THAT THIS DEFLECTION PATTERN DOES NOT GIVE MAXIMUM HEATING FOR DUAL 7.5 DEG FAIL.

NORMALIZED TEST DATA

RUN NUMBER	307	308	309	310
PC (PSIA)	667.0	572.0	579.0	606.0
ALT (MU HG A)	27.0	27.0	27.0	26.0
PO2 (PSIA)	1345.0	1345.0	1345.0	1345.0
PH2 (PSIA)	1335.0	1335.0	1335.0	1335.0
TO2 (F)	163.0	158.0	143.0	155.0
TH2 (F)	143.0	136.0	126.0	134.0
DO2 (IN)	0.335	0.335	0.335	0.335
DH2 (IN)	0.291	0.291	0.291	0.291

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TRANSDUCER

ID	(Q) IN	BTU/SQ-FT-SEC, (P) IN PSIA
PO16	0.001	0.001
PO17	0.000	0.000
PO18	0.000	0.000
Q001	3.354	4.172
Q003	3.155	3.202
Q004	2.227	2.805
Q008	3.155	3.588
Q010	2.445	2.951
Q011	2.208	2.211
Q013	3.174	3.108
Q014	1.516	1.909
Q016	1.488	1.439
Q021	0.007	0.000
Q023	0.085	0.064
Q024	0.108	0.098
Q025	0.144	0.183
Q030	-----	0.009
Q034	0.024	0.045
Q035	0.027	0.046

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CASE ----- RUN SERIES 4, LOG 4.4

GIMBAL PATTERN --- 4A MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: DUAL ACTUATOR FAILURE ON ENGINE NO 3 AT 7.5 DEG WITH 210 INCH HEAT SHIELD . NOTE THAT THIS DEFLECTION PATTERN DOES NOT GIVE MAXIMUM HEATING FOR DUAL 7.5 DEG FAIL.

NORMALIZED TEST DATA
(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	307	308	309	310
PC (PSIA)	667.0	572.0	579.0	606.0
ALT (MU HG A)	27.0	27.0	27.0	26.0
PO2 (PSIA)	1345.0	1345.0	1345.0	1345.0
PH2 (PSIA)	1335.0	1335.0	1335.0	1335.0
TO2 (F)	163.0	158.0	143.0	155.0
ITH2 (F)	143.0	136.0	126.0	134.0
LD02 (IN)	0.335	0.335	0.335	0.335
LD0H2 (IN)	0.291	0.291	0.291	0.291

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA			
Q036	0.033	0.084	0.091	0.091
Q037	0.034	0.071	0.092	0.088
Q043	0.129	0.088	0.131	0.058

CASE ----- RUN SERIES 4, LOG 4.5.1A

GIMRAL PATTERN --- 2 MIXTURE RATIO ----- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF OUTBOARD ENGINE OUT WITH DEFLECTION CASE WHICH DOES NOT
 INCLUDE THRUST STRUCTURE COMPLIANCE. ALSO SEE LOG 4.5.1R FOR ADDITIONAL DATA . NON FLOWING
 NOZZLE AT POSITION NO 3.

NORMALIZED TEST DATA

RUN NUMBER	445	446	447	448	449
PC (PSIA)	665.0	674.0	666.0	687.0	682.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1750.0	1350.0	1350.0	1350.0	1350.0
PH2 (PSIA)	1090.0	1432.0	1432.0	1432.0	1432.0
T02 (F)	160.0	161.0	160.0	158.0	159.0
TH2 (F)	166.0	160.0	159.0	153.0	162.0
DO2 (IN)	0.388	0.361	0.361	0.361	0.361
DH2 (IN)	0.335	0.291	0.291	0.291	0.291

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TRANSDUCER OUTPUT

TRANSDUCER ID	BTU/SQ-FT-SEC
Q001	3.920
Q002	4.810
Q003	6.720
Q004	5.680
Q008	7.630
Q009	7.960
Q010	4.330
Q011	1.290
Q013	2.500
Q014	2.490
Q015	6.150
Q016	2.780
Q017	2.590
Q023	0.108
Q025	0.236
Q031	0.075
Q032	0.134
Q044	0.064
Q053	3.680
	5.850
	5.720
	4.040
	8.660
	3.690
	1.070
	3.020
	3.570
	2.580
	2.490
	0.111
	0.281
	0.061
	0.095
	0.164
	0.078
	4.810
	5.630
	4.380
	8.230
	10.050
	3.760
	1.540
	3.840
	3.640
	2.640
	2.740
	0.107
	0.288
	0.048
	0.082
	0.151
	0.075

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CASE ----- RUN SERIES 4, LOG 4.5.1A

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF OUTBOARD ENGINE OUT WITH DEFLECTION CASE WHICH DOES NOT
INCLUDE THRUST STRUCTURE COMPLIANCE. ALSO SEE LOG 4.5.1B FOR ADDITIONAL DATA . NON FLOWING
NOZZLE AT POSITION NO 3.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	445	446	447	448	449
PC (PSIA)	665.0	674.0	666.0	687.0	682.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1750.0	1350.0	1350.0	1350.0	1350.0
PH2 (PSIA)	1090.0	1432.0	1432.0	1432.0	1432.0
T02 (F)	160.0	161.0	160.0	158.0	159.0
TH2 (F)	166.0	160.0	159.0	153.0	162.0
LOO2 (IN)	0.388	0.361	0.361	0.361	0.361
DH2 (IN)	0.335	0.291	0.291	0.291	0.291

TRANSDUCER

ID					
Q054	1.590	1.820	1.900	1.760	1.790
Q055	0.300	0.310	0.240	0.330	0.320
Q24T	0.130	0.129	0.135	0.115	0.136

TRANSDUCER OUTPUT

BTU/SQ-FT-SEC					
	1.760	1.790			
	0.330	0.320			
	0.115	0.136			

CASE ----- RUN SERIES 4, LOG 4.5.18

GIMRAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF OUTBOARD ENGINE OUT WITH DEFLECTION CASE WHICH DOES NOT INCLUDE THRUST STRUCTURE COMPLIANCE. ALSO SEE LOG 4.5.1A DATA. NON FLOWING NOZZLE AT POSITION NO 3.

NORMALIZED TEST DATA

RUN NUMRER	498	499	519	520	521	522
PC (PSIA)	733.0	733.0	721.0	732.0	722.0	718.0
ALT (MU HG A)	25.0	27.0	23.0	27.0	27.0	25.0
PO2 (PSIA)	1295.0	1295.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1385.0	1385.0	1345.0	1345.0	1345.0	1345.0
T02 (F)	160.0	156.0	156.0	162.0	161.0	159.0
TH2 (F)	160.0	162.0	160.0	160.0	162.0	153.0
DO2 (IN)	0.361	0.361	0.361	0.361	0.361	0.361
DH2 (IN)	0.291	0.291	0.291	0.291	0.291	0.291

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TRANSDUCER ID

TRANSDUCER OUTPUT

				BTU/SQ-FT-SEC		
Q006	4.830	4.820	5.200	4.500	4.360	5.190
Q007	4.020	3.650	3.380	3.760	3.410	3.380
Q015	5.020	6.760	5.690	3.030	5.150	6.800
Q019	5.780	6.210	5.620	6.600	6.560	6.740
Q020	0.001	0.002	-----	-----	0.001	0.001
Q021	0.011	0.004	-----	-----	-----	-----
Q022	0.026	0.031	0.023	0.027	0.031	0.018
Q030	0.018	0.040	0.029	0.036	0.024	0.027
Q033	0.026	0.038	0.040	0.023	0.033	0.029
Q034	0.049	0.059	0.064	0.042	0.054	0.058
Q035	0.140	0.136	0.135	0.135	0.137	0.133
Q036	0.106	0.107	0.116	0.111	-----	0.119
Q037	0.124	0.134	0.130	0.139	-----	0.121
Q038	-----	0.005	0.001	0.001	-----	0.001
Q040	0.031	0.023	0.035	0.022	0.024	0.018
Q041	0.020	0.018	0.021	0.022	0.021	0.030
Q043	-----	0.011	0.010	0.010	0.013	0.012
Q052	3.020	3.480	2.840	3.370	2.950	2.110
Q110	-----	-----	0.524	0.910	-----	-----

CASE ----- RUN SERIES 4, LOG 4.5.18

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF OUTBOARD ENGINE OUT WITH DEFLECTION CASE WHICH DOES NOT INCLUDE THRUST STRUCTURE COMPLIANCE. ALSO SEE LOG 4.5.1A DATA. NON FLOWING NOZZLE AT POSITION NO 3.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	498	499	519	520	521	522
PC (PSIA)	733.0	733.0	721.0	732.0	722.0	718.0
ALT (MU HG A)	25.0	27.0	23.0	27.0	27.0	25.0
PD2 (PSIA)	1295.0	1295.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1385.0	1385.0	1345.0	1345.0	1345.0	1345.0
T02 (F)	160.0	156.0	156.0	162.0	161.0	159.0
1TH2 (F)	160.0	162.0	160.0	160.0	162.0	153.0
1DD2 (IN)	0.361	0.361	0.361	0.361	0.361	0.361
168DH2 (IN)	0.291	0.291	0.291	0.291	0.291	0.291

TRANSDUCER ID	TRANSDUCER OUTPUT	
	BTU/SQ-FT-SEC	
Q111	0.360	0.360

CASE ----- RUN SERIES 4, LOG 4.5.2A

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: OUTBOARD ENGINE OUT ENVIRONMENT WITH DEFLECTION CASES WHICH DO NOT
INCLUDE THRUST STRUCTURE COMPLIANCE. SEE LOG 4.5.2B FOR ADDITIONAL DATA. NON-FLOWING NOZZLE
AT POSITION NO. 3.

NORMALIZED TEST DATA

RUN NUMBER	506	507	508	509	510	511	512
PC (PSIA)	698.0	675.0	718.0	708.0	709.0	704.0	746.0
ALT (MU HG A)	27.0	27.0	27.0	25.0	20.0	23.0	27.0
PO2 (PSIA)	1295.0	1250.0	1260.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1385.0	1335.0	1345.0	1345.0	1345.0	1345.0	1345.0
TD2 (F)	166.0	160.0	158.0	155.0	161.0	164.0	154.0
TH2 (F)	160.0	156.0	161.0	155.0	158.0	160.0	160.0
DO2 (IN)	0.361	0.361	0.361	0.361	0.361	0.361	0.361
1DH2 (IN)	0.291	0.291	0.291	0.291	0.291	0.291	0.291

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TRANSDUCER

TRANSDUCER OUTPUT

ID	BTU/SQ-FT-SEC
Q001	3.810
Q002	5.730
Q003	5.540
Q004	4.860
Q006	4.820
Q007	3.920
Q008	7.560
Q009	7.510
Q010	2.890
Q011	0.770
Q013	2.830
Q014	2.210
Q015	5.410
Q016	1.810
Q017	2.240
Q019	6.040
Q024	1.750
Q025	0.890
Q046	0.340
	2.640
	4.940
	5.610
	4.300
	4.270
	3.640
	6.240
	8.000
	2.910
	0.740
	2.380
	1.830
	3.300
	1.930
	2.360
	5.710
	2.340
	0.800
	0.430
	2.680
	4.800
	5.800
	5.350
	4.420
	3.620
	7.060
	7.800
	3.100
	0.790
	1.620
	1.970
	2.660
	1.480
	2.240
	5.210
	1.970
	0.920
	0.410
	3.180
	4.150
	5.520
	4.480
	4.370
	3.540
	8.390
	9.750
	2.990
	2.060
	3.760
	1.900
	6.680
	2.780
	2.160
	6.690
	1.840
	0.860
	0.320

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 4, LOG 4.5.2A

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: OUTBOARD ENGINE OUT ENVIRONMENT WITH DEFLECTION CASES WHICH DO NOT
 INCLUDE THRUST STRUCTURE COMPLIANCE. SEE LOG 4.5.2B FOR ADDITIONAL DATA. NON-FLOWING NOZZLE
 AT POSITION NO. 3.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	506	507	508	509	510	511	512
PC (PSIA)	698.0	675.0	718.0	708.0	709.0	704.0	746.0
ALT (MU HG A)	27.0	27.0	27.0	25.0	20.0	23.0	27.0
PO2 (PSIA)	1295.0	1250.0	1260.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1385.0	1335.0	1345.0	1345.0	1345.0	1345.0	1345.0
Y02 (F)	166.0	160.0	158.0	155.0	161.0	164.0	154.0
YTH2 (F)	160.0	156.0	161.0	155.0	158.0	160.0	160.0
YD02 (IN)	0.361	0.361	0.361	0.361	0.361	0.361	0.361
YDH2 (IN)	0.291	0.291	0.291	0.291	0.291	0.291	0.291

TRANSDUCER

TRANSDUCER OUTPUT

ID	RTU/SQ-FT-SEC			
Q052	1.920	2.310	1.920	2.720
Q054	1.010	0.840	1.010	0.800
Q110	1.330	1.480	1.260	-----
Q111A	-----	-----	1.400	1.620

CASE ----- RUN SERIES 4, LOG 4.5.28

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: OUTBOARD ENGINE OUT ENVIRONMENT WITH DEFLECTION CASE WHICH DOES NOT
 INCLUDE THRUST STRUCTURE COMPLIANCE. SEE LOG 4.5.2A FOR ADDITIONAL DATA. INTERSTAGE GAGES 26-29
 AT 29.2 DEGREES. NON-FLOWING NOZZLE IN POSITION NO 3.

NORMALIZED TEST DATA

RUN NUMBER	513	514	515	516	517	518
PC (PSIA)	682.0	708.0	714.0	740.0	730.0	719.0
ALT (MU HG A)	28.0	27.0	24.0	27.0	28.0	22.0
PD2 (PSIA)	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1245.0	1245.0	1245.0	1245.0	1245.0	1245.0
TD2 (F)	162.0	156.0	160.0	162.0	156.0	160.0
TH2 (F)	156.0	160.0	160.0	160.0	160.0	156.0
DD2 (IN)	0.361	0.361	0.361	0.361	0.361	0.361
DH2 (IN)	0.291	0.291	0.291	0.291	0.291	0.291

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TRANSDUCER ID

TRANSDUCER ID	RTU/SQ-FT-SEC	TRANSDUCER OUTPUT
Q020	0.020	0.012
Q022	0.181	0.111
Q023	-----	2.740
Q026	-----	0.360
Q027	0.642	1.580
Q028	2.740	1.400
Q029	0.320	0.413
Q030	0.072	0.042
Q031	1.250	1.230
Q032	-----	0.904
Q035	0.549	0.404
Q036	1.210	1.210
Q037	1.520	2.110
Q038	0.164	0.322
Q040	1.050	0.896
Q043	0.146	0.135
Q044	0.236	0.220
Q120	0.544	0.515
Q121	-----	-----

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CASE ----- RUN SERIES 4, LOG 4.5.2B

GIMBAL PATTERN --- 2 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: OUTBOARD ENGINE OUT ENVIRONMENT WITH DEFLECTION CASE WHICH DOES NOT
INCLUDE THRUST STRUCTURE COMPLIANCE. SEE LOG 4.5.2A FOR ADDITIONAL DATA. INTERSTAGE GAGES 26--29
AT 29.2 DEGREES. NON-FLOWING NOZZLE IN POSITION NO 3.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	513	514	515	516	517	518
PC (PSIA)	682.0	708.0	714.0	740.0	730.0	719.0
ALT (MU HG A)	28.0	27.0	24.0	27.0	28.0	22.0
PO2 (PSIA)	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1245.0	1245.0	1245.0	1245.0	1245.0	1245.0
TO2 (F)	162.0	156.0	160.0	162.0	156.0	160.0
1TH2 (F)	156.0	160.0	160.0	160.0	160.0	156.0
1DO2 (IN)	0.361	0.361	0.361	0.361	0.361	0.361
1DH2 (IN)	0.291	0.291	0.291	0.291	0.291	0.291

TRANSDUCER
ID
Q122

TRANSDUCER OUTPUT
BTU/SQ-FT-SEC
----- 0.635 0.735

CASE ----- RUN SERIES 5, LOG 5.1

GIMBAL PATTERN --- 5 MIXTURE RATIO ----- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF SINGLE ACTUATOR FAILURE EFFECTS. ACTUATOR FAILED AT
5 DEGREES INBOARD.
NOTE CASES 216, 216A AND 218, 218A

NORMALIZED TEST DATA

RUN NUMBER	210	212	213	214	215	216	216	217	218	218	233
PC (PSIA)	610.0	623.0	632.0	626.0	639.0	639.0	621.0	615.0	607.0	615.0	627.0
ALT (MU HG A)	27.0	24.0	25.0	21.0	25.0	26.0	23.0	27.0	23.0	23.0	23.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1190.0	1115.0	1115.0	1115.0	1115.0	1115.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0	1240.0	1165.0	1165.0	1165.0	1165.0	1165.0
TO2 (F)	158.0	156.0	163.0	162.0	158.0	156.0	153.0	160.0	156.0	156.0	152.0
TH2 (F)	138.0	135.0	145.0	145.0	140.0	140.0	136.0	138.0	143.0	143.0	129.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
IDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

17

TRANSDUCER

TRANSducer OUTPUT
(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

ID	Q016	Q017	Q018	Q001	Q002	Q003	Q004	Q008	Q009	Q010	Q011	Q013	Q014	Q015	Q016	Q017	Q018	Q019	Q022
	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	6.361	6.361	5.610	7.118	6.191	5.905	4.325	6.114	4.571	5.631	5.997	7.600	6.864	7.217	10.685	9.878	3.498	2.641	4.223
	5.995	5.995	5.890	7.007	5.974	6.478	4.854	6.289	5.841	5.724	7.600	6.864	7.217	10.685	9.878	3.498	2.641	4.223	9.314
	6.071	6.087	-----	-----	5.855	6.923	5.547	5.580	6.789	5.354	7.600	6.864	7.217	10.685	9.878	3.498	2.641	4.223	9.314
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	9.384	9.384	10.530	10.328	9.297	10.682	9.383	9.033	9.693	9.280	10.685	9.878	7.217	10.685	9.878	3.498	2.641	4.223	9.314
	8.318	8.318	9.180	8.067	8.387	8.901	8.620	8.447	7.923	8.529	9.878	9.878	7.217	10.685	9.878	3.498	2.641	4.223	9.314
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	3.094	3.094	3.430	3.806	2.680	4.025	-----	2.805	3.405	3.093	5.997	7.600	6.864	7.217	10.685	9.878	3.498	2.641	4.223
	5.437	5.437	6.710	5.290	6.449	8.130	-----	6.330	7.809	6.988	5.997	7.600	6.864	7.217	10.685	9.878	3.498	2.641	4.223
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	5.843	5.843	7.500	6.926	6.745	7.537	8.009	7.286	7.424	7.687	6.280	6.864	7.217	10.685	9.878	3.498	2.641	4.223	9.314
	2.465	2.465	3.990	2.887	2.967	4.283	3.674	3.278	4.238	-----	2.943	6.864	7.217	10.685	9.878	3.498	2.641	4.223	9.314
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
	4.311	4.311	4.360	5.310	4.747	4.530	4.244	4.686	4.165	4.481	4.647	4.647	4.647	4.647	4.647	4.647	4.647	4.647	4.647
	0.000	0.000	0.020	0.000	0.012	0.033	0.000	0.000	0.014	0.018	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009

(TABLE CONTINUED ON THE NEXT PAGE)

CASE

RUN SERIES 5, LOG 5.1

GIMBAL PATTERN --- 5

MIXTURE RATIO ---- 5.00

NOMINAL PC -----

REMARKS:
BOARD.

5 DEGREES INBOARD.

RUN NUMBER	210	212
PC (PSIA)	610.0	623.0
ALT (MU HG A)	27.0	24.0
P02 (PSIA)	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0
T02 (F)	158.0	156.0
TH2 (F)	138.0	135.0
D02 (IN)	0.388	0.388
DH2 (IN)	0.335	0.335

Q023	0.042	0.041
Q024	0.049	0.051
Q025	0.071	0.072
Q034	-----	0.021
Q035	-----	0.040
Q036	0.031	0.030

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CASE ----- RUN SERIES 5, LOG 5.2

GIMBAL PATTERN --- 6 MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO INVESTIGATE THE EFFECTS OF SINGLE ACTUATOR FAILURE INBOARD. ACTUATOR
FAILED AT 3 DEGREES.

NORMALIZED TEST DATA

RUN NUMBER	219	220	221	222	223	224	225	226	228	229
PC (PSIA)	636.0	620.0	620.0	605.0	635.0	652.0	646.0	603.0	668.0	630.0
ALT (MU HG A)	22.0	28.0	-----	23.0	25.0	24.0	18.0	27.0	20.0	-----
PO2 (PSIA)	1165.0	1140.0	1140.0	1140.0	1140.0	1215.0	1140.0	1115.0	1115.0	1115.0
PH2 (PSIA)	1215.0	1190.0	1190.0	1190.0	1190.0	1265.0	1190.0	1165.0	1165.0	1165.0
TO2 (F)	155.0	140.0	-----	151.0	155.0	158.0	160.0	146.0	166.0	158.0
TH2 (F)	133.0	126.0	-----	131.0	135.0	140.0	141.0	132.0	146.0	139.0
ID02 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
IDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER
ID

TRANSDUCER OUTPUT

	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA									
P016	0.002	0.002	0.002	0.001	0.001	-----	0.001	0.002	0.002	0.001
P017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
P018	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000	0.000
Q001	4.551	3.863	4.567	2.862	4.399	4.440	5.254	6.184	5.327	3.531
Q002	6.270	4.760	5.861	3.531	5.514	6.834	6.956	7.714	7.777	6.691
Q003	8.695	6.840	6.442	4.314	6.907	-----	-----	10.324	9.130	-----
Q004	-----	7.778	7.757	6.122	8.191	8.239	8.609	8.993	7.777	-----
Q008	11.328	10.122	11.621	8.461	11.545	-----	10.077	11.215	11.013	9.661
Q009	9.550	9.266	11.009	9.590	7.912	9.887	9.725	8.332	6.755	8.597
Q010	4.193	2.671	3.333	3.510	3.155	-----	2.788	2.568	-----	-----
Q011	1.789	1.998	1.713	2.236	1.801	1.687	-----	-----	2.204	-----
Q013	3.587	3.191	4.190	4.628	4.031	4.207	-----	-----	3.274	-----
Q014	-----	-----	-----	-----	-----	1.851	-----	1.866	1.798	3.631
Q015	5.068	4.730	5.189	5.672	5.026	4.236	4.011	3.469	3.245	4.013
Q016	2.435	2.528	2.294	3.134	2.329	2.811	2.534	1.908	2.157	2.438
Q017	-----	-----	-----	-----	-----	3.354	-----	3.396	3.822	3.250
Q018	-----	-----	-----	-----	-----	3.092	2.984	2.002	2.252	3.070
Q019	1.411	1.407	1.825	3.865	3.314	2.976	3.111	2.432	2.526	2.949
Q022	0.006	0.016	0.040	0.000	0.007	0.012	0.014	0.009	0.011	0.016

CASE ----- RUN SERIES 5, LOG 5.2

GIMBAL PATTERN --- 6 MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO INVESTIGATE THE EFFECTS OF SINGLE ACTUATOR FAILURE INBOARD. ACTUATOR
FAILED AT 3 DEGREES.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	219	220	221	222	223	224	225	226	228	229
PC (PSIA)	636.0	620.0	620.0	605.0	635.0	652.0	646.0	603.0	668.0	630.0
ALT (MU HG A)	22.0	28.0	----	23.0	25.0	24.0	18.0	27.0	20.0	----
PO2 (PSIA)	1165.0	1140.0	1140.0	1140.0	1140.0	1215.0	1140.0	1115.0	1115.0	1115.0
PH2 (PSIA)	1215.0	1190.0	1190.0	1190.0	1190.0	1265.0	1190.0	1165.0	1165.0	1165.0
IT02 (F)	155.0	140.0	----	151.0	155.0	158.0	160.0	146.0	166.0	158.0
IT02 (F)	133.0	126.0	----	131.0	135.0	140.0	141.0	132.0	146.0	139.0
DD02 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
LDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID	(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA	TRANSDUCER OUTPUT
Q023	0.013	0.044
Q024	0.062	0.062
Q025	0.096	0.088
Q034	0.034	0.059
Q035	----	0.038
Q036	0.037	0.040
	0.082	0.044
	0.093	0.046
	0.130	0.070
	0.027	----
	0.039	----
	0.040	0.031
	0.037	0.049
	0.030	0.049
	0.055	0.050
	0.104	0.090
	0.114	0.114
	0.054	0.054
	0.057	0.057
	0.128	0.128
	0.044	0.044
	0.042	0.042

CASE ----- RUN SERIES 6, LOG 6.1

GIMBAL PATTERN --- 4A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INSTRUMENTED FLOWING NOZZLE INSTALLED WITH QN2 OPPOSITE ENGINE NO 3 TO
 EVALUATE HEATING OF NOZZLE LIP WITH DUAL 7.5 DEG ACTUATOR FAILURE

NORMALIZED TEST DATA

RUN NUMBER	235	236	238	239	240	241	242	243	244	245
PC (PSIA)	670.0	642.0	643.0	645.0	655.0	655.0	656.0	640.0	646.0	657.0
ALT (MU HG A)	27.0	10.0	27.0	26.0	25.0	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1215.0	1115.0	1115.0	1115.0	1115.0	1115.0	1115.0	1115.0	1115.0	1090.0
PH2 (PSIA)	1265.0	1165.0	1165.0	1165.0	1165.0	1165.0	1165.0	1165.0	1165.0	1140.0
TO2 (F)	154.0	-----	173.0	173.0	161.0	163.0	171.0	166.0	168.0	163.0
TH2 (F)	141.0	-----	150.0	150.0	142.0	143.0	146.0	145.0	150.0	145.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER OUTPUT
 BTU/SQ-FT-SEC

ID	TRANSDUCER	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC
N001	65.181	59.558	57.499	4.017	4.776	3.580	3.285	-----	-----	4.944
N002	1.472	4.686	-----	54.773	62.911	55.384	62.622	53.127	51.264	67.144
Q002	-----	3.465	-----	4.194	3.802	4.506	4.412	4.424	4.608	4.261
Q003	-----	2.353	-----	3.175	3.126	-----	1.195	3.051	3.786	2.751
Q004	3.754	3.633	4.177	-----	-----	-----	4.788	3.071	3.258	2.463
Q008	-----	2.294	2.919	3.527	3.522	3.975	4.258	4.217	3.708	3.915
Q010	1.811	1.565	1.966	2.724	2.634	2.817	2.592	2.182	3.238	2.299
Q013	1.830	2.146	2.624	1.744	2.277	2.190	1.888	1.807	1.458	1.501
Q015	-----	0.551	0.511	3.008	3.242	3.068	2.832	3.150	3.062	2.742
Q016	1.311	1.250	1.386	0.451	0.463	0.463	0.520	0.464	0.548	0.548
Q019	-----	0.010	0.010	1.823	1.418	1.293	1.532	1.481	1.291	1.472
Q022	0.030	0.036	0.041	0.007	-----	0.011	0.010	0.014	0.008	0.005
Q023	0.031	0.052	0.036	0.048	0.039	0.037	0.034	0.041	0.042	0.037
Q024	0.052	0.097	0.072	0.055	0.046	0.041	0.037	0.047	0.044	0.036
Q025	-----	0.016	0.014	0.079	0.066	0.053	0.059	0.081	0.084	0.045
Q034	0.067	0.032	-----	0.018	0.017	0.018	0.017	0.017	0.019	0.015
Q035	0.035	0.050	0.033	0.037	0.035	0.032	0.029	0.034	0.033	0.033
Q036	-----	-----	0.045	0.049	0.044	0.041	0.043	0.046	0.051	0.038
Q037	-----	-----	0.045	0.065	0.066	0.049	0.052	0.061	0.069	0.051

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 6, LOG 6.1

GIMBAL PATTERN --- 4A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INSTRUMENTED FLOWING NOZZLE INSTALLED WITH QN2 OPPOSITE ENGINE NO 3 TO
 EVALUATE HEATING OF NOZZLE LIP WITH DUAL 7.5 DEG ACTUATOR FAILURE

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	235	236	238	239	240	241	242	243	244	245
PC (PSIA)	670.0	642.0	643.0	645.0	655.0	655.0	656.0	640.0	646.0	657.0
ALT (MU HG A)	27.0	10.0	27.0	26.0	25.0	27.0	27.0	27.0	27.0	27.0
PD2 (PSIA)	1215.0	1115.0	1115.0	1115.0	1115.0	1115.0	1115.0	1115.0	1115.0	1090.0
PH2 (PSIA)	1265.0	1165.0	1165.0	1165.0	1165.0	1165.0	1165.0	1165.0	1165.0	1140.0
T02 (F)	154.0	-----	173.0	173.0	161.0	163.0	171.0	166.0	168.0	163.0
1 TH2 (F)	141.0	-----	150.0	150.0	142.0	143.0	146.0	145.0	150.0	145.0
17D02 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
178DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID

0043

TRANSDUCER OUTPUT

BTU/SQ-FT-SEC

----- 0.026 ----- 0.000 0.013 0.014 0.014 0.015 0.013 0.010

CASE ----- RUN SERIES 6, LOG 6.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INSTRUMENTED FLOWING NOZZLE INSTALLED WITH QN2 OPPOSITE ENGINE 3 TO
 EVALUATE HEATING OF THE NOZZLE LIP WITH NO ENGINE DEFLECTIONS. LIP GAGES INSTALLED IN POSN 5.

NORMALIZED TEST DATA

RUN NUMBER	246	247	249	250	251	252
PC (PSIA)	628.0	662.0	651.0	633.0	618.0	623.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1215.0	1230.0	1115.0	1090.0	1090.0	1090.0
PH2 (PSIA)	1215.0	1287.0	1165.0	1135.0	1135.0	1135.0
T02 (F)	172.0	170.0	171.0	170.0	168.0	169.0
TH2 (F)	152.0	146.0	150.0	150.0	146.0	145.0
DO2 (IN)	0.361	0.361	0.388	0.388	0.388	0.388
LDH2 (IN)	0.326	0.326	0.335	0.335	0.335	0.335

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TRANSDUCER ID

TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC

N001	2.154	1.909	1.913	2.386	2.301	2.130
N002	1.298	-----	1.485	1.348	1.534	1.552
Q002	3.110	1.384	1.592	2.875	2.250	1.988
Q003	2.878	3.179	2.446	4.054	3.068	2.617
Q004	5.122	4.267	4.077	3.914	5.062	4.504
Q008	2.063	1.967	1.573	1.987	2.669	2.293
Q010	2.405	1.709	1.631	-----	-----	2.100
Q013	2.184	2.396	2.611	2.416	2.506	2.252
Q015	2.053	2.387	3.446	4.653	4.121	3.804
Q016	1.047	1.241	1.204	1.228	1.166	1.085
Q019	1.157	0.974	1.107	0.939	1.074	1.014
Q022	0.007	0.011	0.015	0.012	0.010	0.012
Q023	0.055	0.050	0.063	0.055	0.053	0.047
Q024	0.068	0.059	0.076	0.067	0.062	0.060
Q025	0.127	0.095	0.150	0.124	0.088	0.110
Q034	0.023	0.019	0.023	0.022	0.024	0.022
Q035	0.046	0.038	0.059	0.042	0.046	0.060
Q036	0.060	0.052	0.068	0.059	0.051	0.059
Q037	0.077	0.081	0.084	0.081	0.084	0.066

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 6, LOG 6.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INSTRUMENTED FLOWING NOZZLE INSTALLED WITH QN2 OPPOSITE ENGINE 3 TO
EVALUATE HEATING OF THE NOZZLE LIP WITH NO ENGINE DEFLECTIONS. LIP GAGES INSTALLED IN POSN 5.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	246	247	249	250	251	252
PC (PSIA)	628.0	662.0	651.0	633.0	618.0	623.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1215.0	1230.0	1115.0	1090.0	1090.0	1090.0
PH2 (PSIA)	1215.0	1287.0	1165.0	1135.0	1135.0	1135.0
TO2 (F)	172.0	170.0	171.0	170.0	168.0	169.0
TH2 (F)	152.0	146.0	150.0	150.0	146.0	145.0
LOO2 (IN)	0.361	0.361	0.388	0.388	0.388	0.388
L DH2 (IN)	0.326	0.326	0.335	0.335	0.335	0.335

TRANSDUCER	TRANSDUCER OUTPUT					
ID	(Q) IN BTU/SQ-FT-SEC					
Q043	0.014	0.011	0.015	0.011	0.013	0.014

CASE ----- RUN SERIES 7, LOG 7.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TESTS TO DETERMINE THRUST STRUCTURE HEATING WITH A LARGE HEAT SHIELD
 INTENDED TO SIMULATE A HEAT SHIELD FROM THE 6 ENGINE S-IV CONFIGURATION. ALTHOUGH 0.338 WAS
 LISTED ON ALL DATA SHEETS, THE DIAM. USED WAS PROP. 0.388 AS LISTED IN RUNS 175-183, LOG 8.1

NORMALIZED TEST DATA

RUN NUMBER	169	170	171	172	173	174
PC (PSIA)	654.0	639.0	614.0	593.0	608.0	620.0
ALT (MU HG A)	24.0	26.0	23.0	26.0	25.0	30.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0	1265.0
TO2 (F)	166.0	160.0	160.0	163.0	-----	-----
TH2 (F)	124.0	142.0	143.0	145.0	-----	-----
DO2 (IN)	0.338	0.338	0.338	0.338	0.338	0.338
IDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER
 ID

TRANSDUCER OUTPUT
 BTU/SQ-FT-SEC

Q002	1.108	1.204	1.322	1.580	1.967
Q003	4.967	3.736	5.276	5.738	4.363
Q004	5.180	4.405	5.276	3.638	4.740
Q008	4.706	1.935	1.897	1.424	3.609
Q009	5.943	2.357	2.760	2.121	4.159
Q010	-----	3.860	2.856	3.035	2.977
Q011	2.097	2.563	2.526	2.412	2.324
Q013	1.566	2.182	3.187	1.975	1.366
Q014	1.652	1.431	1.375	1.414	1.305
Q015	4.436	2.347	2.792	2.744	3.211
Q016	3.208	2.347	2.057	2.162	2.569
Q017	-----	0.710	1.226	1.060	1.030
Q018	-----	1.606	0.917	0.873	0.805
Q019	2.542	1.108	1.492	1.507	1.743
Q023	0.027	0.024	0.032	0.023	0.029
Q024	0.032	0.041	0.048	0.036	0.044
Q025	0.056	0.088	0.092	0.083	0.067
Q031	0.009	0.014	0.023	0.015	0.023
Q032	0.017	0.027	-----	0.022	0.023

SD73-SA-0061

CASE ----- RUN SERIES 7, LOG 7.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TESTS TO DETERMINE THRUST STRUCTURE HEATING WITH A LARGE HEAT SHIELD
 INTENDED TO SIMULATE A HEAT SHIELD FROM THE 6 ENGINE S-IV CONFIGURATION. ALTHOUGH 0.338 WAS
 LISTED ON ALL DATA SHEETS, THE DIAM. USED WAS PROB. 0.388 AS LISTED IN RUNS 175-183, LOG 8.1

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	169	170	171	172	173	174
PC (PSIA)	654.0	639.0	614.0	593.0	608.0	620.0
ALT (MU HG A)	24.0	26.0	23.0	26.0	25.0	30.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1265.0	1265.0	1265.0
TO2 (F)	166.0	160.0	160.0	163.0	-----	-----
TH2 (F)	124.0	142.0	143.0	145.0	-----	-----
DO2 (IN)	0.338	0.338	0.338	0.338	0.338	0.338
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER					TRANSDUCER OUTPUT
ID					BTU/SQ-FT-SEC
0052	-----	1.533	2.532	-----	2.037 2.079

CASE ----- RUN SERIES 8, LOG 8.1 AND 8.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOZZLE EXIT PLANE BASE PRESSURE USING PROBES PARALLEL TO (SERIES 8.2
 RNS 179-183) AND NORMAL TO (SERIES 8.1 RUNS 175-178) THE NOZZLE CENTERLINE.
 PROBE MOUNTED BETWEEN ENGINES 2,3 AND 5.

NORMALIZED TEST DATA

RUN NUMBER	175	176	177	178	179	180	181	182	183
PC (PSIA)	643.0	639.0	650.0	623.0	634.0	622.0	-----	633.0	611.0
ALT (MU HG A)	25.0	24.0	26.0	23.0	24.0	16.0	-----	27.0	25.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1190.0	1190.0	1190.0	1190.0	1190.0	1190.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1240.0	1240.0	1240.0	1240.0	1240.0	1240.0
TO2 (F)	163.0	165.0	165.0	160.0	160.0	165.0	163.0	156.0	160.0
TH2 (F)	140.0	146.0	149.0	143.0	143.0	148.0	140.0	141.0	141.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
IDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER

TRANSDUCER OUTPUT

ID	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA
P SPECIA	0.064	0.061	0.056	0.063	0.088	0.098	0.110	-----	0.098
P017	0.001	0.001	0.000	0.001	0.000	0.001	0.000	0.001	0.000
P018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Q001	1.435	1.088	1.740	1.085	1.705	0.843	1.100	1.597	0.869
Q002	2.035	0.999	1.974	1.420	2.472	1.870	2.090	1.328	1.034
Q003	4.256	4.095	4.259	3.378	5.174	4.217	4.620	2.306	4.789
Q004	4.305	3.244	4.862	4.169	5.523	4.715	2.720	3.325	3.941
Q008	1.818	2.928	1.867	1.664	1.994	2.093	3.080	1.478	1.696
Q009	1.720	3.106	2.917	2.506	2.542	2.865	3.480	1.807	2.762
Q011	2.752	2.621	2.703	2.749	2.073	2.388	2.660	2.167	2.400
Q013	2.418	1.167	1.488	2.526	2.233	2.388	2.570	2.676	2.265
Q015	2.418	2.621	2.129	2.465	2.133	1.859	2.550	2.396	2.793
Q016	1.907	2.196	1.945	2.181	1.994	1.829	2.170	2.097	2.907
Q017	1.297	0.939	1.099	-----	1.206	0.914	0.010	0.919	1.065
Q019	1.288	1.622	1.468	1.755	1.126	1.219	2.370	1.448	1.893
Q022	0.013	0.014	0.016	0.013	0.010	0.005	0.014	0.012	0.010
Q023	0.052	0.044	0.049	0.047	0.042	0.022	0.050	0.048	0.047
Q025	0.149	0.104	0.113	0.104	0.098	0.065	0.087	0.076	0.084
Q031	0.026	0.016	0.018	-----	0.015	0.012	0.014	0.018	0.016

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 8, LOG 8.1 AND 8.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOZZLE EXIT PLANE BASE PRESSURE USING PROBES PARALLEL TO (SERIES 8.2
RNS 175-178) AND NORMAL TO (SERIES 8.1 RUNS 179-183) THE NOZZLE CENTERLINE.
PROBE MOUNTED BETWEEN ENGINES 2,3 AND 5.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	175	176	177	178	179	180	181	182	183
PC (PSIA)	643.0	639.0	650.0	623.0	634.0	622.0	-----	633.0	611.0
ALT (MU HG A)	25.0	24.0	26.0	23.0	24.0	16.0	-----	27.0	25.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1190.0	1190.0	1190.0	1190.0	1190.0	1190.0
PH2 (PSIA)	1265.0	1265.0	1265.0	1240.0	1240.0	1240.0	1240.0	1240.0	1240.0
TO2 (F)	163.0	165.0	165.0	160.0	160.0	165.0	163.0	156.0	160.0
1TH2 (F)	140.0	146.0	149.0	143.0	143.0	148.0	140.0	141.0	141.0
1DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
184DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT

ID	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA
Q034	0.054 0.030 0.028 0.027 0.030 0.021 0.026 0.022 0.022
Q035	0.046 0.057 0.052 0.055 0.056 0.051 0.052 0.042 0.041

CASE ----- RUN SERIES 9, LOG 9.1.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF POSSIBLE BOUNDARY LAYER EFFECTS. FILLER MATERIAL
 REMOVED FROM TURBINE EXHAUST MANIFOLD AND INJECTION HOLES, SO THAT THE INITIAL VACUUM IN THIS
 VOLUME WOULD TEND TO REMOVE A PORTION OF THE NOZZLE BOUNDARY LAYER

NORMALIZED TEST DATA

RUN NUMBER	311	312	313	314	315	327	328	329	330
PC (PSIA)	594.0	593.0	606.0	575.0	614.0	620.0	611.0	615.0	637.0
ALT (MU HG A)	25.0	25.0	27.0	24.0	23.0	26.0	23.0	27.0	24.0
PO2 (PSIA)	1345.0	1345.0	1375.0	1375.0	1090.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1335.0	1335.0	1345.0	1345.0	1135.0	1185.0	1185.0	1185.0	1185.0
TO2 (F)	158.0	153.0	153.0	145.0	153.0	153.0	163.0	152.0	160.0
TH2 (F)	143.0	138.0	136.0	132.0	137.0	137.0	150.0	137.0	143.0
DO2 (IN)	0.335	0.335	0.335	0.335	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.291	0.291	0.291	0.291	0.335	0.335	0.335	0.335	0.335

185 TRANSDUCER

ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA									
P016	0.001	0.001	0.000	0.000	0.001	0.001	0.001	0.001	0.000	0.000
P017	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
P018	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Q001	0.968	1.513	0.970	1.319	1.359	1.050	0.517	0.586	0.774	0.774
Q002	1.596	1.364	0.876	1.671	1.801	1.437	0.569	0.997	1.002	1.002
Q003	3.990	3.815	2.086	-----	2.285	3.384	2.358	2.230	3.115	3.115
Q004	4.767	4.891	3.577	-----	3.438	4.546	4.696	4.254	5.070	5.070
Q008	2.405	2.025	1.189	1.880	1.616	1.753	2.472	2.353	2.461	2.461
Q009	2.926	2.110	1.690	2.715	1.740	1.927	2.772	2.137	2.847	2.847
Q011	2.554	2.611	2.659	2.748	2.162	2.762	2.348	2.333	2.857	2.857
Q013	3.341	3.187	3.577	2.726	3.551	-----	-----	2.836	3.135	3.135
Q015	2.809	2.185	2.732	3.715	2.532	2.722	2.813	2.682	3.135	3.135
Q016	2.373	1.972	-----	-----	-----	2.548	2.358	2.333	2.322	2.322
Q017	0.968	2.078	0.928	1.022	1.276	1.030	0.569	0.863	0.734	0.734
Q019	2.213	1.524	1.742	1.847	1.945	1.774	2.420	2.220	2.302	2.302
Q022	0.014	0.011	0.013	0.020	0.016	0.010	0.004	0.010	0.012	0.012
Q023	0.062	0.054	0.056	0.075	0.066	0.055	0.051	0.059	0.055	0.055
Q024	0.076	0.079	0.081	0.255	0.095	0.082	0.068	0.100	0.072	0.072
Q025	0.154	0.143	0.147	0.310	0.171	0.073	0.140	0.155	0.149	0.149

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 9, LOG 9.1.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF POSSIBLE BOUNDARY LAYER EFFECTS. FILLER MATERIAL
 REMOVED FROM TURBINE EXHAUST MANIFOLD AND INJECTION HOLES, SO THAT THE INITIAL VACUUM IN THIS
 VOLUME WOULD TEND TO REMOVE A PORTION OF THE NOZZLE BOUNDARY LAYER

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	311	312	313	314	315	327	328	329	330
PC (PSIA)	594.0	593.0	606.0	575.0	614.0	620.0	611.0	615.0	637.0
ALT (MU HG A)	25.0	25.0	27.0	24.0	23.0	26.0	23.0	27.0	24.0
PO2 (PSIA)	1345.0	1345.0	1375.0	1375.0	1090.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1335.0	1335.0	1345.0	1345.0	1135.0	1185.0	1185.0	1185.0	1185.0
TO2 (F)	158.0	153.0	153.0	145.0	153.0	153.0	163.0	152.0	160.0
TH2 (F)	143.0	138.0	136.0	132.0	137.0	137.0	150.0	137.0	143.0
DO2 (IN)	0.335	0.335	0.335	0.335	0.388	0.388	0.388	0.388	0.388
DO2 (IN)	0.291	0.291	0.291	0.291	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT

ID	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA
Q030	0.009
Q034	0.034
Q035	0.060

(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	0.008	0.012	0.010	0.004	0.007	0.003	0.006
	0.024	0.027	0.026	0.023	0.024	0.016	0.025
	0.067	0.070	0.063	-----	-----	-----	-----

CASE -----

GIMBAL PATTERN	---	NO DEFLECTION	MIXTURE RATIO	---	5.00
NOMINAL PC	-----	632.0 PSIA	INTERSTAGE	-----	OFF

REMARKS: INVESTIGATION OF POSSIBLE BOUNDARY LAYER EFFECTS. FILLER MATERIAL REMOVED FROM TURBINE EXHAUST MANIFOLD AND INJECTION HOLES, SO THAT THE INITIAL VACUUM IN THIS VOLUME WOULD TEND TO REMOVE A PORTION OF THE NOZZLE BOUNDARY LAYER

NORMALIZED TEST DATA

[illegible]

TRANSDUCER

TRANSDUCER ID	TRANSDUCER OUTPUT				(Q) IN RTU/SQ-FT-SEC, (P) IN PSIA			
	0.035	0.022	0.022	0.021	0.017	0.023	0.021	0.021
P001	0.035	0.022	0.022	0.021	0.017	0.023	0.021	0.021
P002	0.037	0.033	0.033	0.034	0.027	0.030	0.034	0.027
P003	0.037	0.030	0.030	0.029	0.025	0.028	0.029	0.027
P005	0.037	0.024	0.024	0.026	0.024	0.022	0.026	0.025
P006	0.022	0.024	0.021	0.019	0.024	0.024	0.025	0.025
P007	0.030	0.021	0.022	0.023	0.025	0.024	0.025	0.025
P008	0.020	0.023	0.022	0.018	0.018	0.022	0.025	0.022
P011	0.035	0.023	0.022	0.019	0.025	0.023	0.025	0.026
Q003	3.388	2.793	3.016	2.813	3.150	3.155	2.813	2.159
Q004	4.594	3.904	4.246	4.159	4.194	5.078	4.159	3.661
Q008	2.054	2.283	1.786	2.365	1.890	1.542	2.365	1.856
Q011	1.599	2.079	2.222	2.126	1.969	1.532	2.126	1.147
Q013	2.837	3.038	2.778	3.252	3.406	2.955	3.252	3.713
Q015	2.371	3.272	1.984	1.437	1.664	1.542	1.437	1.877
Q016	0.039	0.047	0.040	0.029	0.024	0.075	0.029	0.096
Q019	1.482	1.937	1.012	1.753	1.772	1.142	1.753	1.690
Q030	0.008	0.009	0.006	0.005	0.000	0.000	0.005	0.000
Q031	0.029	0.038	0.020	0.022	0.013	0.000	0.022	0.011
Q032	0.039	0.071	0.040	0.034	0.024	0.075	0.034	0.096

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 9, LOG 9.1.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: INVESTIGATION OF POSSIBLE BOUNDARY LAYER EFFECTS. FILLER MATERIAL
 REMOVED FROM TURBINE EXHAUST MANIFOLD AND INJECTION HOLES, SO THAT THE INITIAL VACUUM IN THIS
 VOLUME WOULD TEND TO REMOVE A PORTION OF THE NOZZLE BOUNDARY LAYER

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	316	317	318	319	320	321	322	323	324
PC (PSIA)	597.0	620.0	620.0	637.0	642.0	620.0	642.0	631.0	606.0
ALT (MU HG A)	26.0	25.0	26.0	27.0	29.0	27.0	26.0	26.0	26.0
PO2 (PSIA)	1090.0	1140.0	1140.0	1125.0	1185.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1135.0	1185.0	1135.0	1170.0	1140.0	1185.0	1195.0	1185.0	1185.0
TO2 (F)	149.0	163.0	162.0	156.0	153.0	178.0	153.0	162.0	170.0
TH2 (F)	133.0	143.0	143.0	140.0	138.0	155.0	136.0	142.0	150.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID	(Q) IN	BTU/SQ-FT-SEC, (P)	IN PSIA
Q036	0.078	0.070	0.049
Q037	0.092	0.091	0.044
			0.039
			0.071
			0.063
			0.035
			0.047

CASE ----- RUN SERIES 11, LOG 11.1

GIMBAL PATTERN --- 5A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SIMULATION OF A 5 DEGREE ACTUATOR FAILURE OUTBOARD ON ENGINE NUMBER 3

NORMALIZED TEST DATA

RUN NUMBER	403	404	405	406	407	402
PC (PSIA)	638.0	648.0	642.0	626.0	620.0	643.0
ALT (MU HG A)	27.0	27.0	26.0	25.0	25.0	27.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1210.0	1210.0	1210.0	1210.0	1210.0	1210.0
TO2 (F)	163.0	155.0	150.0	157.0	165.0	162.0
TH2 (F)	143.0	138.0	135.0	140.0	147.0	145.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
IDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSUCER OUTPUT
BTU/SQ-FT-SEC

TRANSUCER ID	Q001	Q002	Q003	Q004	Q019	Q022	Q024	Q025	Q030	Q031	Q032	Q033	Q034	Q035	Q036	Q037	Q040	Q042	Q043
	2.530	2.820	2.820	2.780	2.780	0.021	0.089	0.198	0.026	0.046	0.062	0.016	0.012	0.061	0.069	0.086	0.058	0.058	0.016
	4.140	3.990	3.990	4.700	4.700	0.097	0.191	0.191	0.017	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	6.830	6.740	6.740	6.710	6.710	6.830	6.740	6.740	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	7.700	7.160	7.160	6.760	6.760	7.700	7.160	7.160	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	2.210	---	---	2.320	2.320	2.210	---	---	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.021	0.007	0.007	0.023	0.023	0.021	0.089	0.198	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.097	0.089	0.089	0.013	0.013	0.097	0.191	0.191	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.198	0.191	0.191	0.246	0.246	0.198	0.191	0.191	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.026	0.017	0.017	0.033	0.033	0.026	0.048	0.048	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.046	0.048	0.048	0.050	0.050	0.046	0.048	0.048	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.062	0.066	0.066	0.074	0.074	0.062	0.066	0.066	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.016	0.016	0.016	0.020	0.020	0.016	0.016	0.016	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.012	0.011	0.011	0.035	0.035	0.012	0.011	0.011	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.061	0.051	0.051	0.068	0.068	0.061	0.051	0.051	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.069	0.059	0.059	0.071	0.071	0.069	0.059	0.059	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.086	0.078	0.078	0.083	0.083	0.086	0.078	0.078	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	---	0.032	0.032	0.029	0.029	---	0.032	0.032	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.058	0.065	0.065	0.107	0.107	0.058	0.065	0.065	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012
	0.016	---	---	0.023	0.023	0.016	---	---	0.026	0.048	0.066	0.016	0.011	0.051	0.059	0.078	0.032	0.032	0.012

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CASE ----- RUN SERIES 11, LOG 11.1

GIMBAL PATTERN --- 5A MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SIMULATION OF A 5 DEGREE ACTUATOR FAILURE OUTBOARD ON ENGINE NUMBER 3

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	403	404	405	406	407	402
PC (PSIA)	638.0	648.0	642.0	626.0	620.0	643.0
ALT (MU HG A)	27.0	27.0	26.0	25.0	25.0	27.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1210.0	1210.0	1210.0	1210.0	1210.0	1210.0
TO2 (F)	163.0	155.0	150.0	157.0	165.0	162.0
TH2 (F)	143.0	138.0	135.0	140.0	147.0	145.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
DOH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER	TRANSDUCER OUTPUT					
ID	BTU/SQ-FT-SEC					
Q046	1.400	0.718	0.701	0.804	1.120	0.762

CASE - - - - -

GIMBAL PATTERN	---	5A
NOMINAL PC	-----	632

REMARKS:	SIMULATED
AND MAXIMUM ALTITUDE	SIMULATED
1. 10000	10000
2. 10000	10000
3. 10000	10000
4. 10000	10000
5. 10000	10000
6. 10000	10000
7. 10000	10000
8. 10000	10000
9. 10000	10000
10. 10000	10000
11. 10000	10000
12. 10000	10000
13. 10000	10000
14. 10000	10000
15. 10000	10000
16. 10000	10000
17. 10000	10000
18. 10000	10000
19. 10000	10000
20. 10000	10000
21. 10000	10000
22. 10000	10000
23. 10000	10000
24. 10000	10000
25. 10000	10000
26. 10000	10000
27. 10000	10000
28. 10000	10000
29. 10000	10000
30. 10000	10000
31. 10000	10000
32. 10000	10000
33. 10000	10000
34. 10000	10000
35. 10000	10000
36. 10000	10000
37. 10000	10000
38. 10000	10000
39. 10000	10000
40. 10000	10000
41. 10000	10000
42. 10000	10000
43. 10000	10000
44. 10000	10000
45. 10000	10000
46. 10000	10000
47. 10000	10000
48. 10000	10000
49. 10000	10000
50. 10000	10000
51. 10000	10000
52. 10000	10000
53. 10000	10000
54. 10000	10000
55. 10000	10000
56. 10000	10000
57. 10000	10000
58. 10000	10000
59. 10000	10000
60. 10000	10000
61. 10000	10000
62. 10000	10000
63. 10000	10000
64. 10000	10000
65. 10000	10000
66. 10000	10000
67. 10000	10000
68. 10000	10000
69. 10000	10000
70. 10000	10000
71. 10000	10000
72. 10000	10000
73. 10000	10000
74. 10000	10000
75. 10000	10000
76. 10000	10000
77. 10000	10000
78. 10000	10000
79. 10000	10000
80. 10000	10000
81. 10000	10000
82. 10000	10000
83. 10000	10000
84. 10000	10000
85. 10000	10000
86. 10000	10000
87. 10000	10000
88. 10000	10000
89. 10000	10000
90. 10000	10000
91. 10000	10000
92. 10000	10000
93. 10000	10000
94. 10000	10000
95. 10000	10000
96. 10000	10000
97. 10000	10000
98. 10000	10000
99. 10000	10000
100. 10000	10000

NORMALIZED TEST DATA

RUN NUMBER	408	409	410	411	412	413
PC (PSIA)	633.0	656.0	642.0	622.0	637.0	613.0
ALT (MU HG A)	7.0	5.0	5.0	6.0	5.0	---
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1210.0	1210.0	1210.0	1210.0	1210.0	1210.0
TO2 (F)	164.0	161.0	165.0	158.0	166.0	---
TH2 (F)	144.0	164.0	162.0	164.0	168.0	---
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER OUTPUT
BTU/SQ-FT-SEC

Q0001	1.380	2.840	2.420	2.100	2.040	1.930
Q0002	2.870	3.870	4.560	4.590	3.430	3.520
Q0003	6.214	6.930	7.080	8.990	6.540	6.150
Q0004	8.000	7.340	5.260	10.000	8.600	8.250
Q0019	2.103	1.760	2.710	2.110	2.900	-----
Q0022	0.015	0.010	0.019	0.018	0.011	0.019
Q0024	0.094	0.088	0.107	0.108	0.094	0.111
Q0025	0.215	0.202	0.221	0.232	0.223	0.237
Q0030	0.025	0.014	0.019	0.025	0.015	0.025
Q0031	0.055	0.041	0.044	0.048	0.039	0.049
Q0032	0.068	0.058	0.055	0.068	0.062	0.068
Q0033	0.013	0.014	0.015	0.021	-----	-----
Q0034	0.030	0.035	0.038	0.028	0.016	0.030
Q0035	0.057	0.041	0.070	0.062	0.039	0.067
Q0036	0.075	0.071	0.088	0.069	0.053	0.086
Q0037	0.092	0.085	0.106	0.079	0.070	0.103
Q0040	0.021	0.025	0.024	0.030	0.019	0.021
Q0042	0.103	0.076	0.116	0.089	0.064	0.121
Q0043	0.016	0.015	0.019	0.021	0.018	-----

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 11, LOG 11.2

GIMBAL PATTERN --- 5A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SIMULATION OF A 5 DEGREE ACTUATOR FAILURE OUTBOARD ON ENGINE NUMBER 3,
 AND MAXIMUM ALTITUDE SIMULATED

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	408	409	410	411	412	413
PC (PSIA)	633.0	656.0	642.0	622.0	637.0	613.0
ALT (MU HG A)	7.0	5.0	5.0	6.0	5.0	-----
P02 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1210.0	1210.0	1210.0	1210.0	1210.0	1210.0
T02 (F)	164.0	161.0	165.0	158.0	166.0	-----
TH2 (F)	144.0	164.0	162.0	164.0	168.0	-----
PO02 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
N0H2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT BTU/SQ-FT-SEC		
Q046	0.623	0.656	0.759
		0.707	0.478
			0.855

CASE ----- RUN SERIES 11, LOG 11.3

GIMBAL PATTERN --- 58 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SIMULATION OF A 5 DEGREE ACTUATOR FAILURE OUTBOARD ON ENGINE NUMBER 1

NORMALIZED TEST DATA

RUN NUMBER	414	415	416
PC (PSIA)	636.0	632.0	640.0
ALT (MU HG A)	23.0	22.0	27.0
P02 (PSIA)	1215.0	1215.0	1215.0
PH2 (PSIA)	1210.0	1210.0	1210.0
T02 (F)	167.0	163.0	164.0
TH2 (F)	168.0	166.0	166.0
D02 (IN)	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335

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TRANSducer ID RTU/SQ-FT-SEC TRANSDUCER OUTPUT

Q001	2.340	2.689	3.120
Q002	4.140	4.206	4.660
Q003	5.230	5.960	5.410
Q004	6.100	8.755	6.050
Q019	4.830	4.434	4.520
Q022	0.019	0.027	0.012
Q024	0.128	-----	0.097
Q025	0.270	-----	0.189
Q030	0.021	0.025	-----
Q031	0.048	0.046	0.024
Q032	0.069	0.061	0.040
Q033	0.022	0.017	-----
Q034	0.033	0.094	0.015
Q035	0.074	0.048	0.030
Q036	-----	0.072	0.041
Q037	-----	0.085	0.052
Q040	0.023	0.027	0.019
Q042	0.138	0.155	0.123
Q043	0.019	0.023	0.019

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 11, LOG 11.3

GIMBAL PATTERN --- 58 MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SIMULATION OF A 5 DEGREE ACTUATOR FAILURE OUTBOARD ON ENGINE NUMBER 1

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	414	415	416
PC (PSIA)	636.0	632.0	640.0
ALT (MU HG A)	23.0	22.0	27.0
PO2 (PSIA)	1215.0	1215.0	1215.0
PH2 (PSIA)	1210.0	1210.0	1210.0
TO2 (F)	167.0	163.0	164.0
TH2 (F)	168.0	166.0	166.0
PO02 (IN)	0.388	0.388	0.388
PH02 (IN)	0.335	0.335	0.335

TRANSDUCER
ID

TRANSDUCER OUTPUT
BTU/SQ-FT-SEC

Q046 0.848 0.811 0.867

CASE ----- RUN SERIES 12, LOG 12.1

GIMBAL PATTERN --- 4AA MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE 7.5 DEGREES INBOARD (ENGINE NUMBER 4)
 ON THE CENTER NOZZLE HEATING RATES

NORMALIZED TEST DATA

RUN NUMBER	343	344	345	346	347	348
PC (PSIA)	621.0	614.0	648.0	625.0	661.0	651.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	28.0	28.0
P02 (PSIA)	1125.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1170.0	1185.0	1185.0	1185.0	1185.0	1185.0
T02 (F)	156.0	158.0	155.0	164.0	156.0	155.0
TH2 (F)	141.0	143.0	140.0	144.0	141.0	140.0
D02 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
1 DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER OUTPUT

TRANSDUCER ID	BTU/SQ-FT-SEC
K002	136.726
K004	6.091
K005	2.209
K006	1.291
K007	0.784
K009	0.678
L003	4.712
L004	2.083
L005	1.416
L006	1.335
L007	1.466
L008	1.699
M001	7.152
M006	1.224
M007	0.809
M008	1.052
M009	0.930

CASE ----- RUN SERIES 12, LOG 12.1A

GIMBAL PATTERN --- 4AA MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE 7.5 DEGREES INBOARD (ENGINE NUMBER 4)
 ON THE HEAT SHIELD AND CENTER ENGINE NOZZLE HEATING RATES

NORMALIZED TEST DATA

RUN NUMBER	440	441	442
PC (PSIA)	685.0	671.0	730.0
ALT (MU HG A)	27.0	27.0	27.0
PO2 (PSIA)	1335.0	1335.0	1335.0
PH2 (PSIA)	1345.0	1345.0	1345.0
TO2 (F)	167.0	164.0	160.0
TH2 (F)	172.0	180.0	172.0
DO2 (IN)	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335

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TRANSDUCER

TRANSDUCER OUTPUT

BTU/SQ-FT-SEC

K001	67.700	64.400	60.600
K003	12.300	12.000	10.900
K004	4.330	4.350	3.880
L001	315.000	328.000	310.000
L002	154.000	146.600	138.000
L003	45.500	46.800	41.200
L004	13.800	13.300	13.200
M003	-----	27.400	24.100
M004	9.240	9.800	8.510
Q002	4.110	3.270	4.120
Q003	10.500	10.300	9.310
Q004	9.890	8.910	9.690
Q008	11.200	10.600	10.200
Q009	12.900	14.900	15.700
Q010	27.600	25.400	25.200
Q011	14.700	12.400	13.400
Q014	8.140	6.820	8.750
Q015	10.100	4.820	10.600
Q016	7.650	-----	5.880

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 12, LOG 12.1A

GIMBAL PATTERN --- 4AA MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE 7.5 DEGREES INBOARD (ENGINE NUMBER 4)
 ON THE HEAT SHIELD AND CENTER ENGINE NOZZLE HEATING RATES

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	440	441	442
PC (PSIA)	685.0	671.0	730.0
ALT (MU HG A)	27.0	27.0	27.0
P02 (PSIA)	1335.0	1335.0	1335.0
PH2 (PSIA)	1345.0	1345.0	1345.0
T02 (F)	167.0	164.0	160.0
TH2 (F)	172.0	180.0	172.0
DO2 (IN)	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT BTU/SQ-FT-SEC	
	Q017	2.520
Q019	3.260	2.360

CASE ----- RUN SERIES 12, LOG 12.2

GIMBAL PATTERN --- 4AA MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SAME AS SERIES 12.1 EXCEPT THE INSTRUMENTATION IS SWITCHED TO THE HEAT SHIELD AND THRUST CONE

NORMALIZED TEST DATA

RUN NUMBER	349	350	351	352	353	354
PC (PSIA)	642.0	634.0	648.0	637.0	646.0	625.0
ALT (MU HG A)	27.0	27.0	25.0	27.0	27.0	27.0
P02 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0
T02 (F)	160.0	172.0	162.0	166.0	162.0	166.0
TH2 (F)	140.0	152.0	142.0	147.0	142.0	146.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANS-DUCER

TRANS-DUCER OUTPUT

BTU/SQ-FT-SEC

TRANS-DUCER	Q001	Q002	Q003	Q004	Q008	Q009	Q010	Q011	Q013	Q014	Q015	Q016	Q017	Q019	Q022	Q023	Q024	Q025	Q031
10	1.969	3.377	5.414	7.738	-----	-----	16.637	6.950	1.910	5.473	5.542	6.605	2.343	2.067	0.017	0.040	0.071	0.126	0.017
	1.964	3.110	5.443	8.045	9.400	13.059	21.033	6.380	2.183	5.941	5.523	5.513	2.632	2.672	0.012	0.051	0.060	0.113	0.018
	1.697	3.297	7.371	8.602	10.533	11.704	19.701	5.276	2.175	5.364	7.607	5.491	2.224	3.131	0.005	0.037	0.059	0.105	0.017
	2.034	3.473	6.518	7.898	10.418	11.013	18.950	7.322	2.718	5.953	5.278	6.389	2.689	2.897	0.010	0.042	0.064	0.103	0.025
	2.328	3.659	6.790	8.208	10.566	12.131	21.621	6.653	2.534	5.997	6.369	6.115	2.720	2.818	0.010	0.042	0.058	0.110	0.024
	2.225	3.741	6.927	7.038	8.393	11.629	20.426	8.019	2.872	7.827	6.714	6.310	2.184	2.528	0.011	0.042	0.055	0.103	0.022

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CASE ----- RUN SERIES 12, LOG 12.2

GIMBAL PATTERN --- 4AA MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SAME AS SERIES 12.1 EXCEPT THE INSTRUMENTATION IS SWITCHED TO THE HEAT SHIELD AND THRUST CONE

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	349	350	351	352	353	354
PC (PSIA)	642.0	634.0	648.0	637.0	646.0	625.0
ALT (MU HG A)	27.0	27.0	25.0	27.0	27.0	27.0
PO2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0
TO2 (F)	160.0	172.0	162.0	166.0	162.0	166.0
TH2 (F)	140.0	152.0	142.0	147.0	142.0	146.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT		
	BTU/SQ-FT-SEC		
Q052	1.359	0.977	1.607
		1.697	1.487
			1.871

CASE -----

GIMBAL PATTERN ---
NOMINAL PC -----

REMARKS: SIMULATED

355	356
637.0	637.0
25.0	26.0
1140.0	1140.0
1185.0	1185.0
157.0	160.0
143.0	143.0
0.388	0.388
0.335	0.335

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Abstract

5.497	0.833	0.804	2.877	3.334	5.854	4.891	0.407	4.108	5.377	0.695	0.784	1.607	1.925	1.597	1.945	2.838	3.036	0.012
0.794	0.794	3.215	3.403	7.580	6.221	0.446	4.812	4.485	-----	-----	2.004	1.726	0.943	1.429	2.530	2.113	0.006	

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CASE ----- RUN SERIES 12, LOG 12.3

GIMBAL PATTERN --- 4AB MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: SIMULATED DUAL ACTUATOR FAILURE INBOARD ON ENGINE NUMBER 1

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	355	356	357
PC (PSIA)	637.0	637.0	652.0
ALT (MU HG A)	25.0	26.0	27.0
PO2 (PSIA)	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1185.0
TO2 (F)	157.0	160.0	167.0
TH2 (F)	143.0	143.0	147.0
DO2 (IN)	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335

TRANSDUCER ID

TRANSDUCER OUTPUT
 BTU/SQ-FT-SEC

Q023	0.034	0.037	0.038
Q024	0.061	0.066	0.050
Q025	0.105	0.109	0.110
Q031	0.030	0.026	0.022
Q052	4.385	3.284	4.071

CASE ----- RUN SERIES 13, LOG 13.1.1

GIMBAL PATTERN --- 7 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE AT 5 DEGREES ON NO 4 ENGINE ON CENTER
 ENGINE NOZZLE ENVIRONMENT

NORMALIZED TEST DATA

RUN NUMBER	430	431	432	433	434
PC (PSIA)	622.0	610.0	599.0	607.0	611.0
ALT (MU HG A)	25.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1210.0	1210.0	1210.0	1210.0	1210.0
TO2 (F)	166.0	165.0	166.0	160.0	-----
TH2 (F)	162.0	165.0	171.0	166.0	-----
DO2 (IN)	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335	0.335	0.335

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TRANSducer OUTPUT

TRANSducer ID	BTU7SQ-FT-SEC										
K001	43.800	39.200	38.800	49.600	25.800						
K002	3.870	2.110	-----	-----	-----						
K003	6.960	6.140	6.020	-----	5.360						
K004	2.590	2.420	2.380	-----	2.700						
L001	8.580	9.120	10.140	-----	12.600						
L002	7.330	9.050	9.660	-----	11.700						
L003	5.080	5.100	5.280	7.040	4.880						
L004	4.060	3.750	3.940	3.980	-----						
M001	5.680	6.530	6.090	-----	-----						
M003	3.650	3.420	3.820	-----	3.730						
M004	2.540	2.770	2.950	-----	2.580						
Q002	-----	3.220	-----	3.260	2.640						
Q003	-----	4.650	-----	4.770	4.370						
Q004	-----	4.460	5.370	4.920	4.590						
Q008	-----	11.100	-----	10.300	7.280						
Q009	-----	7.900	8.860	9.530	8.610						
Q010	6.500	6.850	6.970	7.520	-----						
Q011	6.720	7.080	7.160	6.700	-----						
Q014	16.600	14.400	19.700	18.800	-----						

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 13, LOG 13.1.1

GIMBAL PATTERN --- 7 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE AT 5 DEGREES ON NO 4 ENGINE ON CENTER
 ENGINE NOZZLE ENVIRONMENT

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	430	431	432	433	434
PC (PSIA)	622.0	610.0	599.0	607.0	611.0
ALT (MU HG A)	25.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1215.0	1215.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1210.0	1210.0	1210.0	1210.0	1210.0
TO2 (F)	166.0	165.0	166.0	160.0	-----
TH2 (F)	162.0	165.0	171.0	166.0	-----
DO2 (IN)	0.388	0.388	0.388	0.388	0.388
DH2 (IN)	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT RTU/SQ-FT-SEC			
	0015	0016	0019	
	-----	-----	-----	-----
	7.110	6.710	6.710	6.820
	-----	6.140	5.780	-----

CASE ----- RUN SERIES 13, LOG 13.1.1A

GIMBAL PATTERN --- 7 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE AT 5 DEGREES ON NO 4 ENGINE ON CENTER
 ENGINE NOZZLE ENVIRONMENT

NORMALIZED TEST DATA

RUN NUMBER	435	436	437	438
PC (PSIA)	669.0	696.0	717.0	690.0
ALT (MU HG A)	27.0	27.0	27.0	27.0
PO2 (PSIA)	1335.0	1335.0	1335.0	1335.0
PH2 (PSIA)	1345.0	1345.0	1345.0	1345.0
TO2 (F)	168.0	159.0	160.0	167.0
TH2 (F)	174.0	167.0	174.0	172.0
DO2 (IN)	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335

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TRANSDUCER

TRANSDUCER OUTPUT

ID BTU/SQ-FT-SEC

K001	24.500	17.800	14.100	12.300
K003	6.700	5.190	5.310	6.360
K004	3.440	3.100	3.130	3.330
L001	45.000	32.500	35.300	49.800
L002	24.800	18.600	21.400	20.700
L003	8.550	6.950	7.650	7.680
L004	4.540	3.300	3.960	3.820
M003	6.090	5.040	6.070	6.600
M004	2.670	2.620	2.990	2.920
Q002	2.970	3.240	3.490	-----
Q003	4.680	4.700	4.940	4.790
Q004	5.450	-----	5.630	5.820
Q008	9.320	9.700	11.000	11.100
Q009	11.500	11.000	11.600	11.400
Q010	-----	7.760	9.290	8.970
Q011	7.140	7.520	8.260	8.690
Q014	-----	20.900	24.000	21.800
Q015	21.300	20.800	21.800	20.000
Q016	7.660	7.030	7.240	7.900

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 13, LOG 13.1.1A

GIMBAL PATTERN --- 7 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF DUAL ACTUATOR FAILURE AT 5 DEGREES ON NO 4 ENGINE ON CENTER
 ENGINE NOZZLE ENVIRONMENT

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	435	436	437	438
PC (PSIA)	669.0	696.0	717.0	690.0
ALT (MU HG A)	27.0	27.0	27.0	27.0
PO2 (PSIA)	1335.0	1335.0	1335.0	1335.0
PH2 (PSIA)	1345.0	1345.0	1345.0	1345.0
TO2 (F)	168.0	159.0	160.0	167.0
ITH2 (F)	174.0	167.0	174.0	172.0
DO2 (IN)	0.398	0.398	0.398	0.398
DO2H2 (IN)	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT	
	BTU/SQ-FT-SEC	
Q019	6.610	7.780
	6.300	7.140

CASE ----- RUN SERIES 14, LOG 14.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 630.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE ENGINE COMPONENT ENVIRONMENT

NORMALIZED TEST DATA

RUN NUMBER	362	363	364	365	366	367	368	369	370
PC (PSIA)	630.0	614.0	606.0	659.0	631.0	644.0	638.0	617.0	644.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	25.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1135.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0
TO2 (FI)	163.0	161.0	155.0	164.0	163.0	165.0	162.0	165.0	158.0
TH2 (FI)	143.0	141.0	141.0	143.0	143.0	145.0	142.0	136.0	143.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
TDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSducer OUTPUT

ID	BTU/SQ-FT-SEC									
Q001	0.710	0.823	1.096	1.030	---	1.220	---	1.440	1.120	---
Q002	1.110	1.600	1.580	1.840	---	2.270	---	2.660	2.390	---
Q003	2.620	2.190	2.080	2.910	4.860	4.720	3.580	4.100	3.980	---
Q004	5.050	5.240	4.480	5.160	3.860	5.590	5.600	5.990	5.420	---
Q008	1.610	1.960	2.460	2.290	---	---	---	---	---	---
Q022	---	0.011	0.012	0.013	---	0.010	---	0.011	---	---
Q023	0.031	0.061	0.058	0.052	---	0.044	---	0.066	0.036	---
Q024	0.072	0.050	0.084	---	0.096	0.084	0.088	0.089	0.069	---
Q025	---	---	---	0.192	0.163	0.158	0.170	0.176	0.133	---
Q033	0.013	---	---	---	---	---	---	---	---	---
Q046	0.350	0.481	0.590	0.548	0.607	0.595	---	---	0.342	---
Q052	1.790	1.730	1.390	---	---	---	---	---	---	---
Q070	0.156	0.223	0.256	---	---	---	---	---	---	---
Q071	---	---	---	0.048	0.064	0.066	---	---	---	---
Q072	---	---	---	---	---	---	0.034	0.042	0.022	---
Q080	---	0.148	0.178	---	---	---	---	---	---	---
Q081	---	---	---	0.170	0.174	0.184	---	---	---	---
Q082	---	---	---	---	---	---	0.130	0.146	0.091	---
Q090	0.060	0.039	---	---	---	---	---	---	---	---

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 14, LOG 14.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO --- 5.00
 NOMINAL PC ----- 630.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE ENGINE COMPONENT ENVIRONMENT

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	362	363	364	365	366	367	368	369	370
PC (PSIA)	630.0	614.0	606.0	659.0	631.0	644.0	638.0	617.0	644.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	25.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0
TO2 (F)	163.0	161.0	155.0	164.0	163.0	165.0	162.0	165.0	158.0
1 TH2 (F)	143.0	141.0	141.0	143.0	143.0	145.0	142.0	136.0	143.0
2002 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
207 DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT

BTU/SQ-FT-SEC

ID	Q091	Q092	Q100	Q101	Q102
	0.082	0.086	0.090	0.072	0.067
	0.082	0.086	0.090	0.072	0.067
	0.069	0.069	0.093	0.043	0.056
	0.069	0.069	0.093	0.043	0.056
	0.069	0.069	0.093	0.043	0.056

CASE ----- RUN SERIES 14, LOG 14.1.1A

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE ENGINE COMPONENT ENVIRONMENT. ENGINE RING GAGES ON NO 3
 ENGINE TO COMPARE WITH THOSE ON NO 1 ENGINE

NORMALIZED TEST DATA

RUN NUMBER	443	444
PC (PSIA)	603.0	605.0
ALT (MU HG A)	27.0	27.0
PO2 (PSIA)	1215.0	1215.0
PH2 (PSIA)	1210.0	1210.0
TO2 (F)	163.0	168.0
TH2 (F)	169.0	160.0
DO2 (IN)	0.388	0.388
TDH2 (IN)	0.335	0.335

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TRANSDUCER

TRANSducer OUTPUT
 BTU/SQ/FT-SEC

Q001	3.220	2.800
Q002	6.300	3.530
Q003	-----	5.370
Q004	4.460	2.320
Q015	3.200	3.540
Q022	0.008	0.004
Q023	0.063	0.049
Q024T	0.075	0.076
Q024R	0.017	0.023
Q025	0.194	0.152
Q038	0.008	0.004
Q040	0.038	0.029
Q041	0.010	0.008
Q052	2.640	1.430
Q053	0.455	0.491
Q054	0.554	0.604
Q055	0.510	0.363
Q070	0.107	0.097
Q080	0.137	0.137

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CASE ----- RUN SERIES 14, LOG 14.1.1A

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE ENGINE COMPONENT ENVIRONMENT. ENGINE RING GAGES ON NO 3
ENGINE TO COMPARE WITH THOSE ON NO 1 ENGINE

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	443	444
PC (PSIA)	603.0	605.0
ALT (MU HG A)	27.0	27.0
PO2 (PSIA)	1215.0	1215.0
PH2 (PSIA)	1210.0	1210.0
TO2 (F)	163.0	168.0
1 TH2 (F)	169.0	160.0
2002 (IN)	0.388	0.388
9 DH2 (IN)	0.335	0.335

TRANSDUCER

ID

Q090

TRANSDUCER OUTPUT

RTU/SQ/FT-SEC

0.044 0.049

CASE ----- RUN SERIES 14, LOG 14.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- ON

REMARKS: TO DETERMINE J-2 ENGINE COMPONENT ENVIRONMENT

NORMALIZED TEST DATA

RUN NUMBER	371	372	373	374	375	376	377	378	379
PC (PSIA)	594.0	621.0	604.0	604.0	611.0	622.0	633.0	604.0	599.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0
TO2 (F)	165.0	165.0	169.0	165.0	161.0	164.0	146.0	155.0	166.0
TH2 (F)	143.0	145.0	146.0	145.0	144.0	144.0	125.0	138.0	146.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
FOH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER

TRANSDUCER OUTPUT

ID	RTU/SQ-FT-SEC
Q001	1.310 0.802 1.030 0.820 0.981
Q002	2.470 2.130 2.170 1.910 2.120
Q003	4.100 3.300 3.670 3.090 4.130
Q004	5.960 6.210 5.800 4.940 6.120
Q008	2.980 2.430 2.190 1.800 2.780
Q020	0.021 0.017 0.063 0.063 0.063
Q022	0.308 0.280 0.326 0.280 0.760
Q023	1.710 1.800 1.720 0.203 1.590
Q024	0.625 0.678 0.056 0.330 0.330
Q025	0.286 0.285 0.203 0.165 0.165
Q046	0.939 0.722 0.879 0.751 0.966
Q052	2.050 2.200 2.230 1.880 1.940
Q070	0.146 0.159 0.255 0.043 0.202
Q071	0.146 0.159 0.255 0.043 0.202
Q072	0.114 0.126 0.170 0.144 0.184
Q080	0.233 0.235 0.235 0.235 0.235
Q081	0.982 0.653 0.653 0.653 0.653
Q082	0.982 0.653 0.653 0.653 0.653
Q090	0.479 0.633 0.633 0.633 0.633

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 14, LOG 14.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- ON

REMARKS: TO DETERMINE J-2 ENGINE COMPONENT ENVIRONMENT

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	371	372	373	374	375	376	377	378	379
PC (PSIA)	594.0	621.0	604.0	604.0	611.0	622.0	633.0	604.0	599.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0
T02 (F)	165.0	165.0	169.0	165.0	161.0	164.0	146.0	155.0	166.0
T1H2 (F)	143.0	145.0	146.0	145.0	144.0	144.0	125.0	138.0	146.0
21D02 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
21DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID	TRANSDUCER OUTPUT BTU/SQ-FT-SEC	
Q091	1.010	0.737
Q092	0.918	0.922
Q101	0.184	0.134
Q102	0.432	0.213

CASE ----- RUN SERIES 14, LOG 14.3

GIMBAL PATTERN --- 38 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: J-2 ENGINE COMPONENT ENVIRONMENT WITH 7.5 DEGREE SINGLE ACTUATOR FAIL.
 ON ENGINE NO 1. Q70-72, Q80-82, Q90-92, Q100-102 DOUBTFUL BECAUSE OF FLOW INTERFERENCE

NORMALIZED TEST DATA

RUN NUMBER	380	381	382	391	392	393	394	395	396	397	398
PC (PSIA)	608.0	594.0	604.0	607.0	607.0	607.0	607.0	607.0	607.0	611.0	599.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1170.0	1170.0	1170.0	1140.0	1190.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1215.0	1215.0	1215.0	1185.0	1235.0
TO2 (F)	165.0	164.0	175.0	164.0	158.0	157.0	158.0	155.0	164.0	165.0	158.0
TH2 (F)	145.0	143.0	155.0	144.0	142.0	139.0	142.0	138.0	144.0	139.0	143.0
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
1 DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER

BTU/SQ-FT-SEC

ID	BTU/SQ-FT-SEC																		
Q001	1.660	1.590	1.860	2.060	1.990	2.230	1.850	1.350	2.240	1.830	1.500								
Q002	2.160	2.270	2.420	2.840	3.240	3.210	3.160	1.910	2.730	4.110	2.230								
Q003	2.740	3.140	2.420	3.500	2.700	2.680	2.650	3.160	2.780	3.140	3.440								
Q004	3.130	3.060	3.060	3.720	2.840	2.680	2.750	2.600	2.840	2.800	-----								
Q008	4.240	4.620	4.880	6.050	4.840	5.400	4.820	4.480	4.770	4.250	5.080								
Q020	-----	0.007	-----	-----	-----	-----	-----	-----	-----	-----	-----								
Q022	-----	-----	0.008	0.011	0.011	-----	-----	0.023	0.020	-----	-----								
Q024	0.135	0.125	-----	0.119	0.131	0.109	0.086	0.125	0.127	0.141	0.118								
Q025	0.308	0.274	-----	0.228	0.250	0.236	0.188	0.264	0.258	0.258	0.236								
Q041	-----	0.028	0.029	0.026	0.029	-----	-----	-----	0.029	-----	-----								
Q046	0.875	0.532	0.504	0.776	0.754	0.545	0.624	0.885	0.733	0.694	0.868								
Q052	1.570	1.310	2.420	-----	-----	-----	-----	1.884	2.140	2.790	-----								
Q053	-----	-----	-----	0.154	0.108	0.110	0.176	0.154	0.125	0.174	0.211								
Q070	-----	-----	-----	-----	-----	-----	-----	-----	0.642	0.541	0.197								
Q071	-----	-----	-----	0.165	0.172	0.128	0.135	-----	-----	-----	-----								
Q072	0.090	0.095	0.120	-----	-----	-----	-----	-----	-----	-----	-----								
Q080	-----	-----	-----	-----	-----	-----	-----	0.282	0.348	0.278	0.142								
Q081	-----	-----	-----	0.399	0.424	0.409	0.394	-----	-----	-----	-----								
Q082	0.278	0.267	0.317	-----	-----	-----	-----	-----	-----	-----	-----								

CASE - - - - -

CASE - - - - -

GIMBAL PATTERN ---
NOMINAL PC -----

REMARKS: J-2 ENGINE
1. Q70-72, Q80-82, Q

381	380
594.0	608.0
27.0	27.0
1140.0	1140.0
1185.0	1185.0
164.0	165.0
143.0	145.0
0.388	0.388
0.335	0.335

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---	---
---	---
0.108	0.098
---	---
---	---
0.100	0.088

CASE ----- RUN SERIES 14, LOG 14.4

GIMBAL PATTERN --- 3B MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- ON

REMARKS: ENGINE COMPONENT ENVIRONMENT WITH SINGLE ACTUATOR FAILURE ON NUMBER ONE
 ENGINE AT 7.5 DEGREES OUTBOARD

NORMALIZED TEST DATA

RUN NUMBER	383	384	385	386	387	388	389	390	399	400	401
PC (PSIA)	606.0	610.0	594.0	610.0	606.0	599.0	601.0	606.0	611.0	610.0	604.0
ALT (MU HG A)	27.0	25.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	27.0	24.0
PO2 (PSIA)	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1140.0	1215.0	1215.0	1215.0
PH2 (PSIA)	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1185.0	1260.0	1260.0	1260.0
TO2 (F)	165.0	158.0	162.0	157.0	165.0	163.0	164.0	158.0	162.0	163.0	-----
TH2 (F)	185.0	140.0	142.0	138.0	145.0	143.0	144.0	140.0	142.0	143.0	-----
DO2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388	0.388
DO2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER OUTPUT
 BTU/SQ-FT-SEC

ID	TRANSDUCER	Q001	Q002	Q003	Q004	Q008	Q020	Q022	Q024	Q025	Q041	Q046	Q052	Q053
		1.970	1.700	2.390	2.720	2.980	4.780	0.702	0.834	0.501	0.099	1.360	2.200	-----
		2.730	2.390	2.720	2.980	2.980	4.780	0.834	0.923	0.391	0.136	1.510	2.660	-----
		3.240	2.720	2.720	2.980	2.980	4.780	0.834	0.923	0.391	0.136	1.510	2.660	-----
		3.850	2.980	2.980	2.980	2.980	4.780	0.834	0.923	0.391	0.136	1.510	2.660	-----
		5.130	4.780	4.780	4.780	4.780	4.780	0.834	0.923	0.391	0.136	1.510	2.660	-----
		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
		1.340	1.340	2.090	2.440	2.810	5.530	-----	-----	-----	-----	-----	-----	-----
		1.740	1.740	2.770	3.020	3.170	6.160	-----	-----	-----	-----	-----	-----	-----
		1.410	1.410	2.340	2.660	3.600	6.250	0.032	0.551	0.316	0.125	1.190	-----	-----
		1.860	1.860	2.310	2.560	2.660	4.170	0.058	0.756	0.721	0.321	1.140	-----	-----
		2.000	2.000	2.650	2.760	2.590	-----	-----	-----	0.536	0.213	1.200	-----	-----
		1.760	1.760	2.900	2.510	3.230	4.600	0.464	1.310	0.288	0.089	1.510	-----	-----
		1.670	1.670	2.460	-----	-----	4.540	0.056	0.581	0.212	0.120	1.320	-----	-----
		2.270	2.270	2.440	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		1.270	1.270	2.440	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		2.440	2.440	2.440	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		3.460	3.460	3.460	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		3.500	3.500	3.500	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		4.820	4.820	4.820	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		0.054	0.054	0.054	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		0.520	0.520	0.520	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		1.050	1.050	1.050	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		0.267	0.267	0.267	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		-----	-----	-----	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		1.400	1.400	1.400	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		-----	-----	-----	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----
		0.720	0.720	0.720	-----	-----	0.056	-----	0.520	0.212	0.120	1.320	-----	-----

CASE ----- RUN SERIES 15, LOG 15.3.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: DETERMINATION OF THRUST STRUCTURE HEATING RATES
 INTERSTAGE GAGES AT 0 DEGREES . ALSO SEE LOG 15.3.2

NORMALIZED TEST DATA

RUN NUMBER	417	418	419	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC (P) IN PSIA
PC (PSIA)	727.0	715.0	671.0	
ALT (MU HG A)	24.0	27.0	27.0	
PO2 (PSIA)	1285.0	1335.0	1335.0	
PH2 (PSIA)	1235.0	1295.0	1295.0	
TO2 (F)	152.0	148.0	161.0	
TH2 (F)	164.0	165.0	164.0	
DO2 (IN)	0.398	0.388	0.398	
LOH2 (IN)	0.335	0.335	0.335	
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TRANSDUCER ID				
P015	0.029	0.029	0.032	
P017	0.024	0.024	0.024	
Q004	5.360	5.833	4.940	
Q020	0.058	-----	0.050	
Q021	0.324	0.271	0.162	
Q022	0.294	0.093	0.100	
Q023	-----	2.336	1.860	
Q024	0.675	1.366	1.352	
Q025	0.289	0.570	0.515	
Q026	0.210	-----	0.360	
Q027	4.780	-----	4.260	
Q028	8.160	7.028	8.430	
Q029	-----	0.093	-----	
Q030	-----	0.093	0.179	
Q031	0.705	0.676	0.685	
Q032	0.193	0.478	0.420	
Q036	1.910	1.592	1.450	
Q037	0.349	0.192	0.268	
Q040	0.330	0.761	0.787	

CASE ----- RUN SERIES 15, LOG 15.3.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: DETERMINATION OF THRUST STRUCTURE HEATING RATES
INTERSTAGE GAGES AT 0 DEGREES . ALSO SEE LOG 15.3.2

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	417	418	419
PC (PSIA)	727.0	715.0	671.0
ALT (MU HG A)	24.0	27.0	27.0
PO2 (PSIA)	1285.0	1335.0	1335.0
PH2 (PSIA)	1235.0	1295.0	1295.0
TO2 (F)	152.0	148.0	161.0
TH2 (F)	164.0	165.0	164.0
DO2 (IN)	0.398	0.388	0.398
DH2 (IN)	0.335	0.335	0.335

TRANSDUCER

ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC (P) IN PSIA
Q043	0.219 0.121 0.133
Q044	0.162 0.365 0.302
Q046	1.070 1.100 1.097

CASE ----- RUN SERIES 15, LOG 15.3.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- UN

REMARKS: DETERMINATION OF THRUST STRUCTURE HEATING RATES
 INTERSTAGE GAGES AT 45 DEGREES. ALSO SEE RUN SERIES 15.3.1.

NORMALIZED TEST DATA

RUN NUMBER	420	421	422	423
PC (PSIA)	678.0	699.0	733.0	694.0
ALT (MU HG A)	27.0	27.0	27.0	27.0
P02 (PSIA)	1335.0	1335.0	1335.0	1335.0
PH2 (PSIA)	1295.0	1295.0	1295.0	1295.0
T02 (F)	164.0	142.0	173.0	164.0
TH2 (F)	166.0	165.0	168.0	164.0
D02 (IN)	0.398	0.398	0.398	0.398
IDH2 (IN)	0.335	0.335	0.335	0.335

217 TRANSDUCER

ID	TRANSDUCER OUTPUT	
	(O) IN RTU/50-FT-SEC	(P) IN PSIA
P015	0.027	0.029
P017	0.024	0.024
Q002	-----	5.360
Q003	-----	6.690
Q004	6.490	7.160
Q020	0.049	0.072
Q021	0.286	0.324
Q022	0.084	0.081
Q023	2.160	1.022
Q024	1.336	1.480
Q025	0.594	0.644
Q026	0.156	0.125
Q027	0.625	0.600
Q028	0.804	0.851
Q029	0.226	0.168
Q030	-----	0.134
Q031	0.860	0.500
Q032	0.595	0.464
Q036	1.005	1.640
		2.230
		0.478
		0.830
		0.556
		0.180
		0.944
		0.569
		0.078
		0.325
		0.715
		2.510
		0.085
		0.327
		0.111
		6.440

		4.510

		5.360
		6.470
		0.111
		0.415

		1.330

CASE ----- RUN SERIES 15, LOG 15.3.2

GIMRAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: DETERMINATION OF THRUST STRUCTURE HEATING RATES
 INTERSTAGE GAGES AT 45 DEGREES. ALSO SEE RUN SERIES 15.3.1

NORMALIZED TEST DATA
 (CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	420	421	422	423
PC (PSIA)	678.0	699.0	733.0	694.0
ALT (MU HG A)	27.0	27.0	27.0	27.0
P02 (PSIA)	1335.0	1335.0	1335.0	1335.0
PH2 (PSIA)	1295.0	1295.0	1295.0	1295.0
Y02 (F)	164.0	142.0	173.0	164.0
TH2 (F)	166.0	165.0	168.0	164.0
OC2 (IN)	0.398	0.398	0.398	0.398
OH2 (IN)	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT	
	(Q) IN BTU/SQ-FT-SEC	(P) IN PSIA
Q037	0.144	0.292
Q040	0.576	0.507
Q043	0.093	0.125
Q044	0.256	0.188
Q046	0.910	0.195
Q054	-----	-----
	0.921	0.969
		0.841

CASE ----- RUN SERIES 16 , LOG 16.1

GIMBAL PATTERN --- 3R MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECTS OF SINGLE ACTUATOR FAILURE OUTBOARD ON THRUST STRUCTURE WITH INTERSTAGE. INTERSTAGE GAGES 26-29 AT 0 DEGREES AZIMUTH

NORMALIZED TEST DATA

RUN NUMBER	424	425	426
PC (PSIA)	681.0	697.0	703.0
ALT (MU HG A)	27.0	27.0	27.0
PO2 (PSIA)	1335.0	1335.0	1335.0
PH2 (PSIA)	1295.0	1320.0	1320.0
TO2 (F)	162.0	167.0	-----
TH2 (F)	171.0	176.0	-----
LO2 (IN)	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335

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TRANSDUCER ID	TRANSDUCER OUTPUT RTU/SO-FT-SEC		
Q004	4.420	4.480	5.310
Q020	0.035	0.037	0.022
Q021	0.322	0.342	0.324
Q022	0.171	0.214	0.185
Q023	1.920	-----	1.960
Q024	1.100	0.918	1.040
Q025	0.609	0.430	0.396
Q026	0.369	0.289	0.259
Q027	3.800	3.810	3.140
Q028	4.200	6.150	6.100
Q029	0.424	-----	-----
Q030	0.124	0.121	0.115
Q031	0.594	0.700	0.795
Q032	0.510	-----	0.562
Q036	0.197	0.172	0.109
Q037	0.145	0.158	0.254
Q038	-----	0.551	0.452
Q040	1.195	1.120	1.150
Q043	0.087	0.071	0.038

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CASE ----- RUN SERIES 16 , LOG 16.1

GIMBAL PATTERN --- 3R MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECTS OF SINGLE ACTUATOR FAILURE OUTBOARD ON THRUST STRUCTURE WITH INTERSTAGE. INTERSTAGE GAGES 26-29 AT 0 DEGREES AZIMUTH

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	424	425	426
PC (PSIA)	681.0	697.0	703.0
ALT (MU HG A)	27.0	27.0	27.0
P02 (PSIA)	1335.0	1335.0	1335.0
P02 (PSIA)	1295.0	1320.0	1320.0
T02 (F)	162.0	167.0	-----
TH2 (F)	171.0	176.0	-----
220DC2 (IN)	0.398	0.398	0.398
220DH2 (IN)	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT
 BTU/SQ-FI-SEC

ID	0.298	0.330	0.406
0044	0.298	0.330	0.406
0046	1.120	-----	1.090
0054	-----	0.528	0.658

CASE ----- RUN SERIES 16, LOG 16.3.1

GIMRAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE. ----- ON

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE INBOARD ON THRUST STRUCTURE HEATING
 RATES WITH INTERSTAGE ON. INTERSTAGE GAGES Q26,27,28 AT 0 DEGREES AZIMUTH

NORMALIZED TEST DATA

RUN NUMBER	427	428	429
PC (PSIA)	706.0	717.0	681.0
ALT (MU HG A)	-----	27.0	27.0
P02 (PSIA)	1335.0	1335.0	1335.0
PH2 (PSIA)	1320.0	1320.0	1320.0
T02 (F)	-----	161.0	161.0
TH2 (F)	-----	172.0	170.0
D02 (IN)	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335

221 TRANSDUCER
 IN

TRANSDUCER OUTPUT
 RTU/SQ-FT-SEC

0004	7.550	7.250	8.820
0020	0.203	0.097	0.080
0021	0.422	0.268	0.379
0022	-----	0.066	0.356
0023	2.440	1.610	2.300
0024	0.650	0.935	0.442
0024R	-----	0.018	0.016
0025	0.306	0.457	0.346
0026	0.213	0.188	0.190
0027	2.880	3.650	3.780
0028	6.420	7.680	6.800
0029	0.292	0.155	0.475
0030	0.394	0.525	0.662
0031	0.884	0.841	0.754
0032	0.515	0.419	0.132
0036	0.846	0.916	1.070
0037	0.258	0.195	0.225
0038	0.459	0.466	0.360
0040	-----	0.780	1.110

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 16, LOG 16.3.1

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE INBOARD ON THRUST STRUCTURE HEATING
 RATES WITH INTERSTAGE ON. INTERSTAGE GAGES 026,27,28 AT 0 DEGREES AZIMUTH

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	427	428	429
PC (PSIA)	706.0	717.0	681.0
ALT (MU HG A)	-----	27.0	27.0
P02 (PSIA)	1335.0	1335.0	1335.0
PH2 (PSIA)	1320.0	1320.0	1320.0
T02 (F)	-----	161.0	161.0
TH2 (F)	-----	172.0	170.0
22002 (IN)	0.398	0.398	0.398
22002 (IN)	0.335	0.335	0.335

TRANSDUCER

TRANSducer OUTPUT
 BTU/SQ-FT-SEC

ID	0.112	0.130	0.209
Q041	0.304	0.350	0.295
Q054	1.296	1.180	1.165

CASE ----- RUN SERIES 18, LOG 18.1

GIMBAL PATTERN --- 8 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE DEFLECTIONS WITH 1.13 DEGREE PITCH OR YAW

NORMALIZED TEST DATA

RUN NUMBER	479	480	481	482	483	484	485
PC (PSIA)	638.0	621.0	655.0	632.0	638.0	633.0	623.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0	27.0
P02 (PSIA)	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0
P02 (PSIA)	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0
T02 (F)	169.0	168.0	170.0	170.0	157.0	167.0	168.0
TH2 (F)	152.0	150.0	150.0	153.0	155.0	151.0	152.0
P02 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388
LDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335

223 TRANSDUCER
 ID

TRANSDUCER OUTPUT
 BTU/SQ-FT-SEC

ID	Q001	Q002	Q003	Q004	Q006	Q008	Q009	Q010	Q011	Q013	Q014	Q015	Q016	Q017	Q019	Q023	Q024	Q025	Q031
	3.270	4.910	6.810	-----	-----	6.320	5.190	3.320	2.800	2.690	2.520	3.140	2.080	-----	-----	0.038	0.058	0.127	0.037
	-----	4.740	7.540	6.650	-----	5.830	4.910	3.020	2.750	2.690	1.900	2.040	1.810	1.650	2.590	0.065	0.077	0.173	0.047
	3.200	3.570	6.490	5.750	-----	4.550	5.190	-----	2.710	2.900	-----	2.680	2.040	1.090	2.840	0.041	0.058	0.124	0.038
	2.490	4.660	6.580	5.820	-----	5.190	4.910	3.060	2.960	2.570	1.890	2.310	1.970	1.020	2.150	0.051	0.074	0.155	0.042
	-----	4.720	6.870	6.300	-----	6.270	5.600	2.990	2.440	2.640	1.770	2.480	1.800	1.250	3.030	0.064	0.083	0.185	-----
	3.380	4.460	7.150	6.670	4.060	6.900	5.730	3.000	3.280	2.320	1.840	2.770	2.250	1.070	2.680	0.056	0.072	0.173	-----
	-----	5.730	7.850	6.790	-----	7.070	6.220	3.150	2.670	2.150	1.580	3.130	1.940	1.150	2.980	0.061	0.077	0.172	-----

CASE ----- RUN SERIES 18, LOG 18.1

GIMBAL PATTERN --- R MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE DEFLECTIONS WITH 1.13 DEGREE PITCH OR YAW

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMREP	479	480	481	482	483	484	485
PC (PSIA)	638.0	621.0	655.0	632.0	638.0	633.0	623.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0	27.0
PO2 (PSIA)	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0
PH2 (PSIA)	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0
TO2 (F)	169.0	168.0	170.0	170.0	157.0	167.0	168.0
1 TH2 (F)	152.0	150.0	150.0	153.0	155.0	151.0	152.0
2002 (IN)	0.388	0.388	0.388	0.388	0.388	0.388	0.388
2002 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID	TRANSDUCER OUTPUT		RTU/SQ-FT-SEC	
004R	-----	-----	0.044	0.035
0044	0.102	0.133	0.116	0.120
0046	0.320	0.280	0.341	0.382
0052	2.360	2.400	2.960	-----
0054	-----	0.532	0.807	0.873
				0.748
				0.885

CASE ----- RUN SERIES 19, LOG 19.1

GIMBAL PATTERN --- 9 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREE PITCH OR YAW DEFLECTION

NORMALIZED TEST DATA

RUN NUMBER	486	487	488	489	490	491
PC (PSIA)	640.0	618.0	629.0	640.0	646.0	632.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0
P02 (PSIA)	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0
PH2 (PSIA)	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0
T02 (F)	166.0	168.0	165.0	166.0	168.0	160.0
TH2 (F)	153.0	156.0	148.0	153.0	154.0	152.0
DC2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
IDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER OUTPUT
 BTU/SQ-FT-SEC

ID	Q001	Q002	Q003	Q004	Q004R	Q006	Q008	Q009	Q010	Q011	Q013	Q014	Q015	Q016	Q017	Q019	Q023	Q024	Q025
	3.400	5.890	7.680	7.450	0.047	7.460	8.200	6.360	3.410	2.400	3.590	1.760	4.640	2.340	2.070	2.770	0.062	0.085	0.187
	3.420	6.360	7.810	6.760	0.044	6.820	7.680	6.400	3.700	2.710	3.050	1.940	4.150	2.540	1.790	2.840	0.064	0.076	0.169
	2.560	5.070	3.110	7.250	0.042	7.010	7.960	6.110	4.450	2.450	3.030	1.850	-----	2.670	1.910	2.410	0.057	0.085	0.169
	3.440	5.840	-----	7.350	0.036	7.020	8.180	5.980	3.400	3.110	2.980	-----	-----	2.380	2.250	2.440	0.064	0.085	0.169
	3.830	7.240	8.340	-----	0.040	7.780	-----	5.460	3.420	2.520	2.830	1.580	3.640	2.150	2.220	2.210	0.074	0.094	0.203
	3.430	6.320	8.000	6.750	0.045	6.130	7.150	5.910	2.980	2.250	2.910	1.410	3.480	2.230	2.180	2.050	0.055	0.075	0.162

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 19, LOG 19.1

GIMBAL PATTERN --- 9 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREE PITCH OR YAW DEFLECTION

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	486	487	488	489	490	491
PC (PSIA)	640.0	618.0	629.0	640.0	646.0	632.0
ALT (MU HG A)	27.0	27.0	27.0	27.0	27.0	27.0
P02 (PSIA)	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0
P02 (PSIA)	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0
T02 (F)	166.0	168.0	165.0	166.0	168.0	160.0
1 TH2 (F)	153.0	156.0	148.0	153.0	154.0	152.0
2202 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
226 DH2 (IN)	0.335	0.325	0.325	0.325	0.335	0.335

TRANSDUCER

TFANSDUCER OUTPUT
 RTU/SQ-FT-SEC

ID						
Q044	0.100	0.081	0.096	0.102	0.100	
Q046	0.390	0.497	0.360	0.367	0.243	
Q054	0.766	0.803	0.460	0.840		
Q110				0.276	0.282	

CASE ----- RUN SERIES 19, LOG 19.2

GIMBAL PATTERN --- 9A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW

NORMALIZED TEST DATA

RUN NUMRER	492	493	494	495	496	497
PC (PSIA)	639.0	637.0	616.0	621.0	634.0	637.0
ALT (MU HG A)	24.0	26.0	24.0	27.0	26.0	27.0
P02 (PSIA)	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0
PH2 (PSIA)	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0
T02 (F)	170.0	160.0	165.0	165.0	165.0	166.0
TH2 (F)	155.0	160.0	151.0	151.0	151.0	151.0
D02 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
1DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER ID TRANSducer OUTPUT RTU/SQ-FT-SEC

Q001	3.360	2.950	3.420	3.230	3.030	3.350
Q002	5.250	5.310	5.020	5.380	5.480	5.530
Q003	7.010	6.890	6.950	6.790	6.640	7.050
Q004	6.810	6.370	7.750	6.180	6.100	6.620
Q004R	0.039	0.043	0.039	0.043	0.039	0.041
Q006	5.630	5.270	5.630	5.320	5.220	5.900
Q008	7.340	6.990	7.250	8.050	6.010	7.650
Q009	6.580	6.550	7.130	7.770	5.500	7.280
Q010	2.960	2.530	2.890	3.030	2.690	2.960
Q011	2.730	2.460	2.470	2.080	2.280	2.660
Q013	2.360	2.270	2.080	2.270	2.050	2.320
Q014	1.500	1.440	1.650	1.900	1.840	1.860
Q015	3.600	3.170	3.950	4.250	4.060	3.970
Q016	2.320	2.330	2.220	2.150	-----	2.240
Q017	1.760	1.740	1.930	2.130	-----	1.800
Q019	2.840	2.940	2.330	3.450	2.840	2.810
Q023	0.025	0.063	0.051	0.049	0.021	0.069
Q024	0.028	0.085	0.061	0.061	0.032	0.087
Q025	0.046	0.186	0.140	0.130	0.056	0.177

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 19, LOG 19.2

GIMRAL PATTERN --- 9A MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW

NORMALIZED TEST DATA
 (CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	492	493	494	495	496	497
PC (PSIA)	639.0	637.0	616.0	621.0	634.0	637.0
ALT (MU HG. A)	24.0	26.0	24.0	27.0	26.0	27.0
P02 (PSIA)	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0
PH2 (PSIA)	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0
T02 (F)	170.0	160.0	165.0	165.0	165.0	166.0
1TH2 (F)	155.0	160.0	151.0	151.0	151.0	151.0
2D02 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
2D02 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT BTU/SQ-FT-SEC					
0044	0.091	0.132	0.117	0.138	0.092	0.135
0046	0.242	0.248	0.222	0.278	0.323	0.276
0111A	0.118	0.194	-----	-----	-----	-----
0112A	-----	-----	0.065	0.080	-----	-----
0120A	-----	-----	-----	-----	0.052	0.095

CASE ----- RUN SERIES 19, LOG 19.2.2A & AB

GIMBAL PATTERN --- 9B MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW DEFLECTIONS
 RUNS 536-541 LOG A AND RUNS 548-550 LOG AB
 ALSO SEE LOG 19.2.2B

NORMALIZED TEST DATA

RUN NUMBER	536	537	538	539	540	541	548	549	550
PC (PSIA)	677.0	755.0	699.0	693.0	688.0	699.0	658.0	695.0	674.0
ALT (MU HG A)	25.0	27.0	25.0	24.0	20.0	25.0	25.0	24.0	26.0
PO2 (PSIA)	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0
TO2 (F)	160.0	157.0	159.0	159.0	158.0	160.0	157.0	162.0	161.0
TH2 (F)	157.0	159.0	162.0	163.0	158.0	159.0	157.0	160.0	159.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398
IND2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

229 TRANSDUCER

TRANSDUCER OUTPUT
 BTU/SQ-FT-SEC

ID	Q002	Q003	Q009	Q010	Q013	Q014	Q016	Q017	Q023	Q024	Q025	Q026	Q027	Q028	Q029	Q031	Q032	Q040	Q054
	6.100	8.300	6.000	3.810	3.540	2.450	3.150	2.530	---	---	---	---	---	---	---	---	---	---	---
	4.200	7.650	5.200	2.480	4.150	3.100	2.640	1.760	---	---	---	---	---	---	---	---	---	---	---
	5.750	9.100	6.610	3.860	5.050	3.560	2.560	2.150	---	---	---	---	---	---	---	---	---	---	---
	5.850	8.800	6.890	2.720	3.740	4.130	3.050	2.460	---	---	---	---	---	---	---	---	---	---	---
	4.650	8.320	7.680	3.100	3.350	---	---	1.770	---	---	---	---	---	---	---	---	---	---	---
	5.830	10.500	6.970	2.330	3.780	3.820	2.700	1.740	---	---	---	---	---	---	---	---	---	---	---
	5.120	8.700	6.550	2.740	3.620	3.190	2.550	2.120	0.700	---	0.224	---	---	---	---	---	---	---	---
	4.800	8.150	6.750	---	3.620	3.720	3.000	---	1.920	0.980	0.480	---	---	---	---	0.675	0.229	---	0.610
	6.450	9.360	6.180	2.280	3.610	3.180	2.560	---	1.820	1.140	0.520	---	---	---	---	1.180	0.265	---	0.620

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 19, LOG 19.2.2A & AR

GIMBAL PATTERN --- 9B MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW DEFLECTIONS
 RUNS 536-541 LOG A AND RUNS 548-550 LOG AR
 ALSO SEE LOG 19.2.2R

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	536	537	538	539	540	541	548	549	550
PC (PSIA)	677.0	755.0	699.0	693.0	688.0	699.0	658.0	695.0	674.0
ALT (MU HG A)	25.0	27.0	25.0	24.0	20.0	25.0	25.0	24.0	26.0
PO2 (PSIA)	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0
TO2 (F)	160.0	157.0	159.0	159.0	158.0	160.0	157.0	162.0	161.0
TH2 (F)	157.0	159.0	162.0	163.0	158.0	159.0	157.0	160.0	159.0
PO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT

ID	Q110B	Q111B	Q112B
	1.270	1.730	
	-----	-----	-----
	0.850		
	-----	-----	-----
		0.970	
	-----	-----	-----
		0.591	1.090
	-----	-----	-----
		1.010	1.060
	-----	-----	-----
			1.170
	-----	-----	-----

CASE ----- RUN SERIES 19, LOG 19.2.2B

GIMBAL PATTERN --- 9B MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: NOMINAL STEADY STATE DEFLECTION WITH 0.8 DEGREES PITCH OR YAW
 ALSO SEE LOG 19.2.2A & AB

NORMALIZED TEST DATA

RUN NUMBER	529	530	531	532	533	534	535
PC (PSIA)	676.0	695.0	685.0	685.0	680.0	656.0	688.0
ALT (MU HG A)	26.0	27.0	27.0	27.0	27.0	28.0	25.0
P02 (PSIA)	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0
P02 (PSIA)	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0
T02 (F)	154.0	153.0	160.0	155.0	152.0	155.0	-----
TH2 (F)	159.0	156.0	158.0	156.0	154.0	161.0	-----
D02 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335

251 TRANSDUCER

TRANSDUCER OUTPUT

ID	RTU/SQ-FT-SEC															
Q001	3.860	4.290	3.180	4.890	3.960	4.150	2.800									
Q004	6.950	9.410	6.570	7.150	7.750	7.600	7.600									
Q006	7.490	6.920	7.330	6.920	6.960	6.790	6.760									
Q007	2.480	2.360	3.770	-----	-----	-----	-----									
Q008	5.150	5.750	7.950	7.290	6.500	6.290	6.600									
Q011	4.510	3.110	3.220	3.650	-----	4.120	4.270									
Q015	3.350	3.870	4.540	3.130	3.540	3.460	3.970									
Q019	1.870	2.250	2.740	2.450	2.700	2.420	2.370									
Q020	0.074	0.074	0.027	-----	0.098	0.031	0.024									
Q021	0.137	0.113	-----	-----	0.169	0.059	0.063									
Q022	0.212	0.123	-----	0.276	0.191	0.274	0.190									
Q030	-----	0.391	0.800	0.750	0.276	0.622	0.429									
Q033	-----	0.276	0.239	-----	-----	-----	-----									
Q034	0.201	0.298	0.237	0.216	0.292	0.182	0.323									
Q035	1.360	1.110	1.430	1.320	1.120	1.320	0.672									
Q036	-----	1.260	1.610	1.160	1.470	1.370	0.765									
Q037	0.307	0.545	0.179	0.213	0.234	0.242	0.133									
Q038	0.340	-----	0.520	-----	-----	-----	-----									
Q040	1.200	-----	1.240	-----	-----	-----	-----									

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CASE ----- RUN SERIES 19, LOG 19.2.2B

GIMBAL PATTERN --- 9B MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: NOMINAL STEADY STATE DEFLECTION WITH 0.8 DEGREES PITCH OR YAW
ALSO SEE LOG 19.2.2A & AR

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	529	530	531	532	533	534	535
PC (PSIA)	676.0	695.0	685.0	685.0	680.0	656.0	688.0
ALT (MU HG A)	26.0	27.0	27.0	27.0	27.0	28.0	25.0
PC2 (PSIA)	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0
TC2 (F)	154.0	153.0	160.0	155.0	152.0	155.0	----
TH2 (F)	159.0	156.0	158.0	156.0	154.0	161.0	----
2002 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398
2002 DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT

ID.	RIU/SQ-FT-SEC
0041	0.190 0.165 0.112
0043	0.317 0.360 0.198
0052	5.130 3.500

CASE ----- RUN SERIES 19, LOG 19.2.3A

GIMBAL PATTERN --- 9R MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW
 ALSO SEE LOG 19.2.3R

NORMALIZED TEST DATA

RUN NUMBER	542	543	544	545	546	547
PC (PSIA)	687.0	687.0	699.0	699.0	690.0	706.0
ALT (MU HG A)	23.0	24.0	25.0	24.0	26.0	27.0
P02 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
P02 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
T02 (F)	156.0	158.0	153.0	157.0	160.0	158.0
TH2 (F)	160.0	156.0	156.0	159.0	158.0	162.0
D02 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
IDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER OUTPUT

TRANSDUCER ID	RTU/SQ-FT-SEC
Q002	5.700
Q003	9.790
Q009	7.100
Q010	2.830
Q013	3.720
Q014	3.420
Q016	2.980
Q017	1.630
Q023	0.056
Q024	0.123
Q025	0.199
Q031	0.033
Q032	0.058
Q054	0.730
Q120A	-----
Q121A	-----
Q122B	0.015
	0.048
	0.105
	0.085
	0.700
	0.054
	0.037
	0.218
	0.110
	0.076
	1.930
	2.200
	3.380
	3.360
	2.420
	7.950
	8.040
	5.070
	5.850
	8.700
	2.500
	3.460
	3.770
	2.370
	2.650
	0.066
	0.096
	0.210
	0.038
	0.063
	0.590
	0.142

CASE ----- RUN SERIES 19, LOG 19.2.3B

GIMBAL PATTERN --- 98 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREE PITCH OR YAW DEFLECTIONS
 ALSO SEE LOG 19.2.3A

NORMALIZED TEST DATA

RUN NUMBER	523	524	525	526	527	528
PC (PSIA)	680.0	699.0	713.0	703.0	708.0	695.0
ALT (MU HG A)	26.0	27.0	27.0	28.0	27.0	26.0
PO2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
TO2 (F)	161.0	163.0	157.0	162.0	160.0	157.0
TH2 (F)	161.0	161.0	157.0	156.0	158.0	162.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
DO2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT BTU/SQ-FT-SFC
0001	3.720
0004	6.200
0006	6.990
0007	2.360
0008	4.090
0011	3.760
0015	2.490
0019	1.490
0020	0.005
0022	0.023
0030	0.029
0033	0.013
0034	0.037
0035	0.084
0036	0.105
0037	0.109
0040	0.043
0041	0.031
0043	0.021
0001	3.120
0004	6.800
0006	6.950
0007	2.980
0008	7.000
0011	3.510
0015	3.940
0019	2.340
0020	0.004
0022	0.024
0030	0.023
0033	0.010
0034	0.036
0035	0.082
0036	0.095
0037	0.114
0040	0.035
0041	0.030
0043	0.023
0001	2.620
0004	6.970
0006	6.720
0007	3.710
0008	-----
0011	4.650
0015	3.890
0019	2.320
0020	0.003
0022	0.018
0030	0.019
0033	0.016
0034	0.023
0035	0.070
0036	0.100
0037	0.111
0040	0.025
0041	0.031
0043	0.019
0001	2.680
0004	6.900
0006	6.670
0007	2.360
0008	-----
0011	4.950
0015	2.920
0019	1.890
0020	-----
0022	0.014
0030	0.026
0033	0.016
0034	0.027
0035	0.075
0036	0.106
0037	0.118
0040	0.038
0041	0.033
0043	0.024
0001	3.360
0004	7.200
0006	6.800
0007	2.290
0008	7.260
0011	3.670
0015	3.670
0019	2.270
0020	0.004
0022	0.013
0030	0.018
0033	0.012
0034	0.036
0035	0.084
0036	0.096
0037	0.111
0040	0.051
0041	0.032
0043	0.020

CASE ----- RUN SERIES 19, LOG 19.2.3R

GIMBAL PATTERN ---- 9R MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREE PITCH OR YAW DEFLECTIONS
 ALSO SEE LOG 19.2.3A

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	523	524	525	526	527	528
PC (PSIA)	680.0	699.0	713.0	703.0	708.0	695.0
ALT (MU HG_A)	26.0	27.0	27.0	28.0	27.0	26.0
PO2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
T02 (F)	161.0	163.0	157.0	162.0	160.0	157.0
T02 (F)	161.0	161.0	157.0	156.0	158.0	162.0
2002 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
2002 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT		
	BTU/SQ-FT-SEC		
Q052	4.780	2.340	2.880
		3.930	3.170
			3.460

CASE ----- RUN SERIES 19, LOG 19.3

GIMBAL PATTERN --- 9B MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW

NORMALIZED TEST DATA

RUN NUMRER	500	501	502	503	504	505
PC (PSIA)	650.0	650.0	623.0	616.0	615.0	622.0
ALT (MU HG A)	25.0	24.0	27.0	20.0	24.0	25.0
PD2 (PSIA)	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0
PH2 (PSIA)	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0
TD2 (F)	162.0	171.0	169.0	170.0	167.0	169.0
TH2 (F)	147.0	150.0	151.0	150.0	151.0	153.0
DD2 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
DDH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER OUTPUT
 RTU/SQ-FT-SEC

TRANSDUCER ID	0001	0002	0003	0004	0004R	0006	0008	0009	0010	0011	0013	0014	0015	0016	0017	0019	0023	0024	0025
	3.070	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100	3.100
	5.240	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520
	8.210	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160	7.160
	6.940	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820	7.820
	0.042	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041
	6.100	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150	7.150
	6.850	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640	6.640
	7.000	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910	6.910
	3.970	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980	2.980
	4.160	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110	4.110
	3.150	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270	3.270
	2.630	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360	2.360
	3.720	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320	3.320
	2.440	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950	1.950
	1.120	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020	2.020
	2.860	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800	2.800
	0.063	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062
	0.079	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081
	0.169	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173	0.173

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 19. LOG 19.3

GIMBAL PATTERN --- 98 MIXTURE RATIO ---- 5.00
 NOMINAL PC ----- 632.0 PSIA INTERSTAGE ----- OFF

REMARKS: NOMINAL STEADY STATE WITH 0.8 DEGREES PITCH OR YAW

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	500	501	502	503	504	505
PC (PSIA)	650.0	650.0	623.0	616.0	615.0	622.0
ALT (MU HG. A)	25.0	24.0	27.0	20.0	24.0	25.0
P02 (PSIA)	1125.0	1125.0	1125.0	1125.0	1125.0	1125.0
P02 (PSIA)	1170.0	1170.0	1170.0	1170.0	1170.0	1170.0
T02 (F)	162.0	171.0	169.0	170.0	167.0	169.0
T02 (F)	147.0	150.0	151.0	150.0	151.0	153.0
P002 (IN)	0.388	0.388	0.388	0.388	0.388	0.388
P002 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

ID	TRANSDUCER OUTPUT BTU/SQ-FT-SEC					
Q044	0.119	0.112	0.094	0.013	0.153	0.117
Q046	0.501	0.405	0.370	0.390	0.455	0.435
Q110B	0.273	0.236	---	---	---	---
Q111B	---	---	0.101	0.117	---	---
Q112B	---	---	---	---	0.072	0.070

CASE ----- RUN SERIES 20, LOG 20.1.1 AND LOG 20.1.2

GIMBAL PATTERN --- 28 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES

NUMBER 3 ENGINE OUT
 LOG 20.1.1 RUNS 551-558, LOG 20.1.2 RUNS 571-576

NORMALIZED TEST DATA

RUN NUMBER	551	552	553	554	555	556	557	558	571	572	573
PC (PSIA)	722.0	728.0	733.0	700.0	734.0	730.0	724.0	725.0	719.0	710.0	727.0
ALT (MU HG A)	25.0	29.0	27.0	26.0	27.0	25.0	26.0	25.0	24.0	29.0	27.0
PO2 (PSIA)	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0
TO2 (F)	156.0	162.0	160.0	160.0	160.0	153.0	160.0	156.0	160.0	157.0	153.0
TH2 (F)	156.0	156.0	157.0	156.0	160.0	160.0	163.0	161.0	156.0	159.0	163.0
DO2 (IN)	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361
PH2 (IN)	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291

TRANSDUCER OUTPUT

TRANSDUCER ID	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC	BTU/SQ-FT-SEC
Q001	---	---	---	---	---	---	---	---	5.040	3.380	2.620
Q002	4.460	4.460	5.150	3.730	4.700	4.610	4.240	5.300	---	---	---
Q003	6.060	5.270	5.440	4.470	5.000	4.580	4.820	5.700	---	---	---
Q004	---	---	---	---	---	---	---	---	4.420	3.530	4.900
Q006	---	---	---	---	---	---	---	---	4.910	3.380	4.510
Q008	---	---	---	---	---	---	---	---	8.690	---	7.360
Q009	8.650	8.290	8.510	7.640	9.150	8.760	9.210	7.890	---	---	---
Q010	5.500	4.750	3.320	5.770	---	---	---	---	---	---	---
Q011	---	---	---	---	---	---	---	---	2.220	1.540	0.940
Q013	3.760	4.340	3.820	7.760	3.620	2.850	4.940	3.380	---	---	---
Q014	2.420	---	2.690	3.890	2.510	3.340	2.920	3.010	---	---	---
Q015	---	---	---	---	---	---	---	---	11.600	---	6.380
Q016	2.560	---	2.320	4.200	2.290	3.800	3.000	2.010	---	---	---
Q017	---	2.810	2.880	2.820	2.600	2.620	2.640	2.530	---	---	---
Q019	---	---	---	---	---	---	---	---	---	---	---
Q020	---	---	---	---	---	---	---	---	7.510	7.390	7.450
Q021	---	---	---	---	---	---	---	---	0.001	0.001	0.001
Q022	---	---	---	---	---	---	---	---	0.001	0.001	0.001
Q023	0.038	---	0.081	0.093	0.071	0.047	---	0.069	0.023	---	0.017

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 20, LOG 20.1.1 AND LOG 20.1.2

GIMBAL PATTERN --- 2R MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES

NUMBER 3 ENGINE OUT
 LOG 20.1.1 RUNS 551-558, LOG 20.1.2 RUNS 571-576

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	551	552	553	554	555	556	557	558	571	572	573
PC (PSIA)	722.0	728.0	733.0	700.0	734.0	730.0	724.0	725.0	719.0	710.0	727.0
ALT (MU HG A)	25.0	29.0	27.0	26.0	27.0	25.0	26.0	25.0	24.0	29.0	27.0
PO2 (PSIA)	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0
T02 (F)	156.0	162.0	160.0	160.0	160.0	153.0	160.0	156.0	160.0	157.0	153.0
TH2 (F)	156.0	156.0	157.0	156.0	160.0	160.0	163.0	161.0	156.0	159.0	163.0
DO2 (IN)	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361
PH2 (IN)	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291

TRANSDUCER

ID RTU/SQ-FT-SEC

ID	0024	0025	0030	0031	0032	0034	0035	0038	0044	Q110A	Q111A	Q112A	Q121A	Q122A
0.063	0.122	0.141	0.043	0.074	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062	0.062
0.119	0.253	0.057	0.077	0.131	0.240	0.136	0.167	0.161	0.168	0.169	0.169	0.169	0.169	0.169
0.079	0.126	0.079	0.109	0.079	0.126	0.079	0.109	0.079	0.126	0.079	0.109	0.079	0.126	0.079
0.200	0.279	0.200	0.224	0.200	0.279	0.200	0.224	0.200	0.279	0.200	0.224	0.200	0.279	0.200
0.023	0.044	0.023	0.038	0.023	0.044	0.023	0.038	0.023	0.044	0.023	0.038	0.023	0.044	0.023
0.073	0.094	0.073	0.081	0.073	0.094	0.073	0.081	0.073	0.094	0.073	0.081	0.073	0.094	0.073
0.055	0.118	0.055	0.081	0.055	0.118	0.055	0.081	0.055	0.118	0.055	0.081	0.055	0.118	0.055
0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
0.047	0.143	0.047	0.081	0.047	0.143	0.047	0.081	0.047	0.143	0.047	0.081	0.047	0.143	0.047
0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 20, LOG 20.1.1 AND LOG 20.1.2

GIMRAL PATTERN --- 2R MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES
NUMBER 3 ENGINE OUT
LOG 20.1.1 RUNS 551-558, LOG 20.1.2 RUNS 571-576

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	574	575	576
PC (PSIA)	754.0	744.0	739.0
ALT (MU HG A)	23.0	25.0	27.0
PO2 (PSIA)	1260.0	1260.0	1260.0
PH2 (PSIA)	1345.0	1345.0	1345.0
TO2 (F)	163.0	159.0	158.0
ITH2 (F)	160.0	156.0	153.0
ND02 (IN)	0.361	0.361	0.361
NDH2 (IN)	0.291	0.291	0.291

TRANSDUCER OUTPUT
BTU/SQ-FT-SEC

TRANSDUCER ID	4.050	2.790	4.240
Q001	---	---	---
Q002	---	---	---
Q003	---	---	---
Q004	3.900	2.400	4.140
Q006	3.560	4.350	4.970
Q008	7.580	6.660	7.810
Q009	---	---	---
Q010	---	---	---
Q011	1.100	1.840	---
Q013	---	---	---
Q014	---	---	---
Q015	10.200	7.910	10.500
Q016	---	---	---
Q017	---	---	---
Q019	7.590	7.980	7.750
Q020	0.003	0.001	0.001
Q021	0.001	0.001	0.001
Q022	0.017	0.001	0.008
Q023	---	---	---

CASE ----- RUN SERIES 20, LOG 20.1.1 AND LOG 20.1.2

GIMBAL PATTERN --- 28 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES
NUMBER 3 ENGINE OUT
LOG 20.1.1 RUNS 551-558, LOG 20.1.2 RUNS 571-576

NORMALIZED TEST DATA
(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	574	575	576
PC (PSIA)	754.0	744.0	739.0
ALT (MU HG A)	23.0	25.0	27.0
PO2 (PSIA)	1260.0	1260.0	1260.0
PH2 (PSIA)	1345.0	1345.0	1345.0
T02 (F)	163.0	159.0	158.0
T1H2 (F)	160.0	156.0	153.0
2002 (IN)	0.361	0.361	0.361
10H2 (IN)	0.291	0.291	0.291

TRANSDUCER ID

TRANSDUCER ID	BTU/SQ-FT-SEC
---------------	---------------

Q024	---
Q025	---
Q030	0.020
Q031	---
Q032	---
Q034	0.031
Q035	0.103
Q038	0.001
Q044	---
Q110A	---
Q111A	---
Q112A	---
Q121A	0.098
Q122A	---

CASE ----- RUN SERIES 20, LOG 20A.1.2

GIMRAL PATTERN --- 2R-MOD MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON RASE REGION HEATING RATES
 NUMBER 3 ENGINE OUT. MODIFIED GIMRAL PATTERN 2B IS THE SAME AS 2B EXCEPT THAT THE INOPERATIVE
 ENGINE IS ALSO GIMRALED

NORMALIZED TEST DATA

RUN NUMBER	583	584	585	586	587
PC (PSIA)	731.0	736.0	708.0	730.0	742.0
ALT (MU HG A)	20.0	22.0	27.0	26.0	27.0
PO2 (PSIA)	1260.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1345.0	1345.0	1345.0	1345.0	1345.0
TC2 (F)	160.0	161.0	156.0	163.0	160.0
TH2 (F)	160.0	160.0	162.0	156.0	162.0
DO2 (IN)	0.361	0.361	0.361	0.361	0.361
1DH2 (IN)	0.291	0.291	0.291	0.291	0.291

TRANSDUCER	TRANSDUCER OUTPUT
ID	RTU/SQ-FT-SEC

Q001	3.490	4.590	4.260	2.700	4.760
Q004	3.570	4.220	3.600	-----	4.200
Q006	3.940	4.060	4.250	-----	3.720
Q008	6.480	8.670	5.490	6.460	6.740
Q011	2.650	0.830	1.520	0.820	1.310
Q019	9.020	7.770	-----	8.590	8.960
Q020	0.001	-----	0.001	0.001	-----
Q021	0.001	0.001	0.001	0.001	0.001
Q022	0.019	0.019	-----	0.013	0.027
Q023	0.112	0.097	0.092	0.103	0.101
Q024	0.129	0.126	0.123	0.131	0.126
Q030	0.046	-----	-----	-----	0.028
Q033	-----	0.022	0.033	0.023	0.032
Q043	0.009	0.007	0.010	0.009	0.011
Q046	-----	0.343	0.161	0.254	0.144

GIMBAL PATTERN	---	2B	MIXTURE RATIO	----	5.50
NOMINAL PC	-----	715.0	INTERSTAGE	-----	ON

NORMALIZED TEST DATA

243: 1 ID
TRANSDUCER

TRANSDUCER OUTPUT
BTU/SQ-FT-SEC

[illegible]

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 20, LOG 20.2.1 AND LOG 20.2.2

GIMBAL PATTERN --- 2B MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES
 NUMBER 3 ENGINE OUT AND INTERSTAGE ON. INTERSTAGE 'A' GAGES AT 29, 'B' GAGES AT 0 DEGREES
 LOG 20.2.1 RUNS 559-564, LOG 20.2.2 RUNS 565-570

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	559	560	561	562	563	564	565	566	567	568	569
PC (PSIA)	729.0	735.0	724.0	729.0	715.0	719.0	735.0	723.0	751.0	730.0	729.0
ALT (MU HG A)	23.0	27.0	20.0	24.0	25.0	22.0	25.0	25.0	28.0	27.0	24.0
PO2 (PSIA)	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0	1345.0
IT02 (F)	163.0	161.0	160.0	158.0	156.0	159.0	156.0	157.0	155.0	162.0	157.0
2TH2 (F)	156.0	163.0	160.0	167.0	158.0	161.0	156.0	157.0	156.0	160.0	157.0
4DO2 (IN)	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361	0.361
IDH2 (IN)	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291	0.291

TRANSDUCER ID

TRANSDUCER OUTPUT BTU/SQ-FT-SEC

Q032	0.660	1.340	1.400	0.870	1.900	1.260	----	----	----	----	----
Q044	-----	0.320	0.430	0.150	0.490	0.360	----	----	----	----	----
Q110A	-----	-----	-----	-----	0.350	0.240	----	----	----	----	----
Q111A	-----	-----	0.290	0.330	-----	-----	----	----	----	----	----
Q112A	0.350	0.370	-----	-----	-----	-----	----	----	----	----	----
Q120A	-----	-----	-----	-----	-----	-----	0.540	0.390	-----	1.330	----
Q121A	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----
Q122A	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----
Q26A	-----	-----	-----	-----	-----	-----	-----	-----	0.170	0.140	----
Q26R	0.450	0.520	0.380	0.290	0.310	0.320	-----	-----	-----	-----	----
Q27A	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----
Q27B	1.360	1.890	2.040	2.620	1.740	2.030	0.660	0.670	0.520	1.120	1.320
Q28A	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	----
Q28B	2.450	1.950	2.040	3.110	1.620	2.050	0.770	0.560	-----	0.370	----
Q29B	-----	0.990	1.030	-----	0.760	0.810	-----	-----	-----	-----	----

(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 20, LOG 20.2.1 AND LOG 20.2.2

GIMBAL PATTERN --- 28 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES
NUMBER 3 ENGINE OUT AND INTERSTAGE ON. INTERSTAGE 'A' GAGES AT 29, 'B' GAGES AT 0 DEGREES
LOG 20.2.1 RUNS 559-564, LOG 20.2.2 RUNS 565-570

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	570
PC (PSIA)	718.0
ALT (MU HG A)	27.0
P02 (PSIA)	1260.0
PH2 (PSIA)	1345.0
T02 (F)	157.0
TH2 (F)	165.0
D02 (IN)	0.361
DH2 (IN)	0.291

TRANSDUCER

ID	
Q001	3.910
Q002	-----
Q003	-----
Q004	3.510
Q006	3.930
Q008	8.110
Q009	-----
Q010	-----
Q015	11.100
Q017	-----
Q019	7.980
Q020	0.022
Q021	-----
Q022	0.039
Q023	-----
Q024	-----
Q025	-----
Q030	0.093
Q031	-----

TRANSDUCER OUTPUT
BTU/SQ-FT-SEC

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 20, LOG 20.2.1 AND LOG 20.2.2

GIMBAL PATTERN --- 2B MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF OUTBOARD ENGINE OUT ON BASE REGION HEATING RATES
NUMBER 3 ENGINE OUT AND INTERSTAGE ON. INTERSTAGE 'A' GAGES AT 29, 'B' GAGES AT 0 DEGREES
LOG 20.2.1 RUNS 559-564, LOG 20.2.2 RUNS 565-570

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	570
PC (PSIA)	718.0
ALT (MU HG A)	27.0
PO2 (PSIA)	1260.0
PH2 (PSIA)	1345.0
TO2 (F)	157.0
TH2 (F)	165.0
DO2 (IN)	0.361
CH2 (IN)	0.291

TRANSDUCER

ID	---
Q032	---
Q044	---
Q110A	---
Q111A	---
Q112A	---
Q120A	---
Q121A	---
Q122A	0.450
Q26A	0.100
Q26B	---
Q27A	0.880
Q27B	---
Q28A	---
Q28B	---
Q29B	---

TRANSDUCER OUTPUT
BTU/SQ-FT-SEC

RUN SERIES 21, LOG 21.1

MIXTURE RATIO	----	5.50
INTERSTAGE	----	OFF

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE INBOARD AT 3 DEGREES ON BASE REGION HEATING RATES

NORMALIZED TEST DATA

RUN NUMBER	588	589	590	591	592	593
PC (PSIA)	715.0	703.0	703.0	690.0	697.0	697.0
ALT (MU HG A)	27.0	27.0	24.0	-----	26.0	24.0
PO2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
TO2 (F)	158.0	160.0	153.0	163.0	163.0	159.0
TH2 (F)	158.0	160.0	153.0	163.0	163.0	159.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER
ID

00001	4.530	-----	5.950	6.340	5.460	7.510
00002	7.100	-----	8.150	9.310	8.350	10.600
00003	7.260	7.700	-----	9.790	9.150	9.860
00004	6.810	7.050	8.510	7.060	6.400	7.760
00006	6.580	5.320	6.170	6.300	6.450	-----
00008	10.600	11.800	12.200	11.100	12.600	11.200
00009	-----	10.660	9.670	9.500	10.700	8.740
00010	-----	2.240	1.380	1.770	3.380	1.960
00011	2.990	2.950	2.800	2.770	3.270	2.940
00013	-----	5.510	4.550	4.750	5.280	4.840
00014	4.260	3.700	3.370	3.870	2.710	4.700
00015	6.370	7.300	5.840	-----	6.860	6.440
00016	-----	-----	-----	-----	-----	2.490
00017	2.620	2.720	-----	-----	2.220	3.190
00019	3.410	3.080	3.120	3.410	2.790	3.150

CASE ----- RUN SERIES 21, LOG 21.2

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE INBOARD AT 3 DEGREES WITH INTERSTAGE

NORMALIZED TEST DATA

RUN NUMBER	594	595	596	597	598	599	600
PC (PSIA)	719.0	715.0	714.0	702.0	675.0	679.0	696.0
ALT (MU HG A)	27.0	24.0	25.0	26.0	27.0	25.0	27.0
PO2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
TO2 (F)	162.0	156.0	158.0	162.0	153.0	160.0	162.0
TH2 (F)	162.0	154.0	157.0	156.0	155.0	162.0	162.0
IDO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398
248 DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT

ID	RTU/SQ-FT-SEC
Q001	5.850 5.490 5.340 3.810
Q002	9.050 8.320 8.190 7.430
Q003	----- 9.140 7.190 7.020
Q004	----- 7.140 6.190 6.650
Q006	----- 7.210 7.350 6.410 6.540
Q008	13.000 10.950 10.200 10.100 11.100 10.900 12.600
Q009	10.600 10.220 8.100 ----- 10.400 8.510 8.210
Q010	2.160 2.720 3.740 ----- 2.200 ----- 2.850
Q011	2.100 3.740 2.430 4.100 2.740 3.170 4.420
Q013	5.460 5.290 4.690 ----- 4.200 4.610 9.040
Q014	3.100 2.720 2.590 3.320 3.560 5.120 5.330
Q015	6.040 5.940 5.850 7.300 7.260 7.050 10.400
Q016	2.580 3.230 ----- 3.370 ----- 3.340
Q017	3.750 2.570 2.600 2.760 2.210 2.730 2.560
Q019	3.340 3.030 3.260 3.040 4.040 4.800 4.040

CASE ----- RUN SERIES 22, LOG 22.1

GIMRAL PATTERN --- 6R MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE OUTBOARD AT 3 DEGREES ON BASE REGION
 HEATING RATES. RUN 604 QUESTIONABLE DUE TO EARLY DIAPHRAGM BREAK AND EARLY BLAST WAVE RETURN

NORMALIZED TEST DATA

RUN NUMBER	601	602	603	604	605	606
PC (PSIA)	701.0	722.0	717.0	673.0	690.0	691.0
ALT (MU HG A)	27.0	26.0	28.0	25.0	24.0	27.0
PD2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
T02 (F)	162.0	163.0	160.0	152.0	150.0	162.0
TH2 (F)	162.0	158.0	155.0	150.0	160.0	158.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER ID TRANSDUCER OUTPUT

ID	TRANSDUCER OUTPUT RTU/SQ-FT-SEC
Q020	0.016
Q021	0.012
Q022	0.020
Q023	0.044
Q024	0.092
Q025	0.188
Q030	0.011
Q031	0.032
Q032	0.061
Q034	0.059
Q035	0.119
Q037	0.055
Q044	0.114
Q110	0.552
Q111	-----
Q112	-----
	0.001
	0.001
	0.001
	0.010
	0.055
	0.083
	0.190
	0.009
	0.029
	0.057
	0.019
	0.051
	0.063
	0.121

	0.194

	0.054
	0.114

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CASE ----- RUN SERIES 22, LOG 22.2

GIMBAL PATTERN --- 69 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- ON

REMARKS: EFFECT OF SINGLE ACTUATOR FAILURE OUTBOARD AT 3 DEGREES WITH INTERSTAGE
 ON, ON BASE REGION HEATING RATES

NORMALIZED TEST DATA

RUN NUMBER	607	608	609	610	611	612	613
PC (PSIA)	702.0	690.0	692.0	687.0	704.0	704.0	698.0
ALT (MU HG A)	25.0	27.0	27.0	25.0	27.0	26.0	27.0
P02 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
T02 (F)	156.0	163.0	158.0	160.0	161.0	163.0	162.0
TH2 (F)	156.0	158.0	160.0	160.0	165.0	160.0	162.0
P02 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398
PH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER

TRANSDUCER OUTPUT

IN	BTU/SQ-FT-SEC
Q020	0.055
Q021	0.121
Q022	0.132
Q023	0.700
Q024	1.000
Q025	0.580
Q026	0.162
Q027	1.290
Q029	0.470
Q030	0.218
Q031	0.371
Q032	0.660
Q044	0.132
Q110	0.176
Q111	0.176
Q112	0.176

GIMBAL PATTERN --- 8 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE WALL ENVIRONMENT WITH ACTUATOR FAILURES INBOARD ON
 NO 4 ENGINE AT 1.6 DEGREES
 ROW 1 GAGES BETWEEN ENGINE 4 AND 5

NORMALIZED TEST DATA

RUN NUMBER	625	665	666	667	668	669
PC (PSIA)	672.0	752.0	710.0	732.0	743.0	720.0
ALT (MU HG A)	23.0	23.0	24.0	25.0	26.0	27.0
PO2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
TO2 (F)	150.0	153.0	150.0	148.0	155.0	153.0
TH2 (F)	159.0	156.0	160.0	156.0	155.0	143.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER

ID	TRANSDUCER OUTPUT					
	(Q) IN BTU/SQ-FT-SEC,	(P) IN PSIA				
P005	0.026	0.038	0.037	0.037	0.037	
P006	0.025	0.033	0.026	0.030	---	
QK01	9.430	---	9.600	5.350	5.660	
QK02	3.660	---	3.040	2.600	3.090	
QK03	5.000	6.600	5.300	5.300	4.200	
QK04	3.520	3.330	3.500	3.480	3.200	
QK05	2.660	2.200	2.800	2.420	2.920	
QK06	0.915	1.770	2.500	---	1.230	
QL02	---	7.850	---	2.360	3.340	
QL03	1.580	5.500	5.270	2.360	4.440	
QL04	2.530	3.300	2.060	1.730	2.000	
QL05	0.745	0.220	1.520	2.080	---	
QL06	1.270	1.430	1.410	1.370	1.530	
QM01	2.300	3.110	---	2.580	3.520	
QM02	3.570	3.200	---	3.700	4.150	
QM03	3.550	3.200	3.460	5.700	6.200	
QM04	2.500	2.420	2.920	4.170	4.520	
QM05	2.500	2.420	2.920	4.170	4.520	
QM06	2.000	1.430	2.180	2.920	4.200	

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CASE ----- RUN SERIES 23, LOG 23.1.1

GIMBAL PATTERN --- 8 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE WALL ENVIRONMENT WITH ACTUATOR FAILURES INBOARD ON
 NO. 4 ENGINE AT 1.6 DEGREES
 ROW L GAGES BETWEEN ENGINE 4 AND 5

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	625	665	666	667	668	669
PC (PSIA)	672.0	752.0	710.0	732.0	743.0	720.0
ALT (MU HG A)	23.0	23.0	24.0	25.0	26.0	27.0
PO2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0	1235.0
TO2 (F)	150.0	153.0	150.0	148.0	155.0	153.0
TH2 (F)	159.0	156.0	160.0	156.0	155.0	143.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT					
	(Q) IN	HTU/SQ-FT-SEC,	(P) IN	PSIA		
0003	7.400	5.800	6.200	6.350	4.580	3.900
0004	5.750	-----	-----	-----	-----	-----
0016	-----	2.800	1.700	-----	2.650	-----
0017	-----	0.840	1.150	1.090	0.655	0.675
0024	-----	0.099	0.085	0.160	0.086	0.218
0024R	-----	-----	-----	-----	0.001	-----
0025	0.298	-----	-----	0.001	0.131	-----
0044	-----	0.141	0.103	0.145	0.107	0.140

GIMRAL PATTERN --- 6A MIXTURE RATIO --- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER NOZZLE WALL ENVIRONMENT WITH SINGLE ACTUATOR FAILURE INROAPD.
 NOTE: QK03 AND QK04 RUN 629 RESULTS QUESTIONABLE SINCE OSCILLOSCOPE TRACE EITHER
 COINCIDES OR OFF SCALE. M GAGES AT 315, L AT 292.5, K AT 270 DEGREES.

NORMALIZED TEST DATA

RUN NUMBR	650	651	652	653	654	655	627	628	629
PC (PSIA)	701.0	690.0	733.0	695.0	706.0	695.0	700.0	680.0	715.0
ALT (MU HG A)	27.0	27.0	27.0	30.0	-----	19.0	26.0	25.0	27.0
PC2 (PSIA)	-----	-----	-----	-----	-----	-----	1285.0	1285.0	1280.0
PH2 (PSIA)	-----	-----	-----	-----	-----	-----	1235.0	1235.0	1235.0
T02 (F)	156.0	156.0	152.0	153.0	144.0	143.0	160.0	162.0	160.0
TH2 (F)	156.0	155.0	145.0	150.0	133.0	153.0	160.0	156.0	160.0
LD02 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER

TRANSDUCER OUTPUT

ID	(Q) IN RTU/SQ-FT-SEC	(P) IN PSIA
P005	0.031	0.034
P006	0.025	0.030
QK01	-----	34.800
QK02	-----	13.400
QK03	-----	7.060
QK04	-----	3.880
QK05	2.800	2.670
QK06	2.510	1.960
QL02	-----	10.400
QL04	-----	8.000
QL04	4.080	4.030
QL05	2.760	2.470
QL06	2.210	2.030
QM01	-----	11.100
QM02	-----	10.800
QM03	-----	7.040
QM04	-----	6.900
QM05	3.820	3.160
QM06	3.220	2.130

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 23, LOG 23.2

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER NOZZLE WALL ENVIRONMENT WITH SINGLE ACTUATOR FAILURE INBOARD.
 NOTE: Q003 AND Q004 RUN 629 RESULTS QUESTIONABLE SINCE OSCILLOSCOPE TRACE EITHER
 COINCIDES OR OFF SCALE. M GAGES AT 315, L AT 292.5, K AT 270 DEGREES.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	650	651	652	653	654	655	627	628	629
PC (PSIA)	701.0	690.0	733.0	695.0	706.0	695.0	700.0	680.0	715.0
ALT (MU HG A)	27.0	27.0	27.0	30.0	---	19.0	26.0	25.0	27.0
P02 (PSIA)	---	---	---	---	---	---	1285.0	1285.0	1280.0
PH2 (PSIA)	---	---	---	---	---	---	1235.0	1235.0	1235.0
T02 (F)	156.0	156.0	152.0	153.0	144.0	143.0	160.0	162.0	160.0
TH2 (F)	156.0	155.0	145.0	150.0	133.0	153.0	160.0	156.0	160.0
DC2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER

IN

TRANSDUCER OUTPUT

	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	
Q003	7.120	8.300
Q004	5.570	6.900
Q008	12.200	11.800
Q009	9.100	9.700
Q010	---	---
Q016	4.000	5.730
Q017	1.890	4.220
Q044	---	2.560
	---	0.032

CASE ----- RUN SERIES 23, LOG 23.3

GIMBAL PATTERN --- 10 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE INBOARD AT 0.9 DEG

NORMALIZED TEST DATA

RUN NUMBER	656	657	658	659	660
PC (PSIA)	690.0	695.0	712.0	723.0	695.0
ALT (MU HG A)	24.0	22.0	17.0	26.0	9.0
PO2 (PSIA)	1270.0	1270.0	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0	1220.0	1220.0
TO2 (F)	150.0	153.0	153.0	153.0	150.0
TH2 (F)	153.0	153.0	153.0	156.0	150.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335

TRANSDUCER OUTPUT
 (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

ID	Q	P
P005	0.032	0.032
P006	0.028	0.028
QK01	2.820	3.340
QK02	2.500	2.280
QK03	3.280	3.380
QK04	2.610	2.830
QK05	2.320	2.100
QK06	1.300	1.270
QL02	1.830	1.540
QL03	2.100	1.940
QL04	-----	1.640
QL05	1.180	1.320
QL06	-----	0.950
QM01	0.785	1.770
QM02	-----	2.380
QM03	4.890	3.490
QM04	-----	3.580
QM05	3.700	1.850
QM06	3.520	1.390

CASE ----- RUN SERIES 23, LOG 23.3

GIMBAL PATTERN --- 10 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE INBOARD AT 0.9 DEG

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	656	657	658	659	660
PC (PSIA)	690.0	695.0	712.0	723.0	695.0
ALT (MU HG A)	24.0	22.0	17.0	26.0	9.0
PO2 (PSIA)	1270.0	1270.0	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0	1220.0	1220.0
1 T02 (F)	150.0	153.0	153.0	153.0	150.0
2 TH2 (F)	153.0	153.0	153.0	156.0	150.0
56 DO2 (IN)	0.398	0.398	0.398	0.398	0.398
1 DH2 (IN)	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT	
	(Q) IN BTU/SQ-FT-SEC	(P) IN PSIA
Q003	6.600	4.100
Q004	6.400	4.240
Q008	5.830	4.660
Q009	5.630	5.500
Q016	2.280	2.830
Q017	2.090	1.260
Q025	-----	-----

CASE ----- RUN SERIES 23, LOG 23.4

GIMBAL PATTERN --- 11 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE INBOARD ON
 ENGINE NO 4 AT 6 DEGREES
 NOTE THAT ALL THE HEATING RATES ON RUN 697 ARE LOW IN COMPARISON WITH OTHER RUNS

NORMALIZED TEST DATA

RUN NUMBR	694	695	696	697	698	699
PC (PSIA)	727.0	722.0	722.0	725.0	711.0	710.0
ALT (MU HG A)	27.0	28.0	23.0	27.0	27.0	29.0
PO2 (PSIA)	1235.0	1235.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1285.0	1285.0	1235.0	1235.0	1235.0	1235.0
TO2 (F)	162.0	158.0	160.0	160.0	160.0	160.0
TH2 (F)	153.0	158.0	158.0	160.0	160.0	162.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

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TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA									
	694	695	696	697	698	699	700	701	702	703
P005	84.500	97.500	61.900	90.200	76.000					
QK01	28.800	24.800	29.300	23.500	28.700	23.000				
QK02	9.050	7.700	8.100	4.400	6.800	6.000				
QK03	2.920	2.600	2.700	1.700	2.200	1.800				
QK04	1.380	1.300	1.400	1.300	1.200	1.200				
QK05	24.100	22.300	24.800	19.900	24.600	22.200				
QL01	14.900	14.200	14.900	11.000	13.400	13.300				
QL02	6.000	5.300	5.300	3.700	4.800	4.100				
QL03	2.300	2.000	2.100	1.600	1.900	1.700				
QL04	1.380	1.200	1.900	1.100	0.970	1.100				
QL05	4.860	4.200	5.800	3.800	5.800	4.500				
QM01	4.820	4.800	5.500	4.000	5.300	4.600				
QM02	3.350	3.300	3.400	2.700	3.300	3.100				
QM03	2.360	2.400	2.300	1.800	2.400	2.000				
QM04	1.770	1.900	1.500	1.400	1.600	1.300				
QM05	5.500	6.300	12.400	5.800	6.000	6.500				
Q008	7.200	9.400	7.500	7.000	7.000	7.000				
Q009	12.100	9.000	10.700	10.600	12.700	10.100				

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 23, LOG 23.4

GIMBAL PATTERN --- 11 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE INBOARD ON
 ENGINE NO 4 AT 6 DEGREES
 NOTE THAT ALL THE HEATING RATES ON RUN 697 ARE LOW IN COMPARISON WITH OTHER RUNS

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	694	695	696	697	698	699
PC (PSIA)	727.0	722.0	722.0	725.0	711.0	710.0
ALT (MU HG A)	27.0	28.0	23.0	27.0	27.0	29.0
P02 (PSIA)	1235.0	1235.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1285.0	1285.0	1235.0	1235.0	1235.0	1235.0
1 T02 (F)	162.0	158.0	160.0	160.0	160.0	160.0
1 TH2 (F)	153.0	158.0	158.0	160.0	160.0	162.0
258 D02 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
1 DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT					
	(Q) IN		BTU/SQ-FT-SEC, (P) IN PSIA			
Q011	12.200	12.600	12.500	10.700	12.300	
Q013	14.900	16.200	16.300	12.300	12.700	13.400
Q014	26.400	20.300	26.600	23.100	27.600	22.000
Q015	11.800	17.600	18.700	15.100	14.600	16.600
Q016	6.300	6.700	7.400	6.900	7.000	7.400
Q017	2.460	1.400	1.500	2.000	2.500	2.300
Q025	0.030	0.158	0.216	0.187	0.181	0.208

CASE ----- RUN SERIES 23, LOG 23.5

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH TRANSIENT GIMBAL PATTERN DURING

SEPARATION

NORMALIZED TEST DATA

RUN NUMBER	677	678	679
PC (PSIA)	722.0	706.0	719.0
ALT (MU HG A)	25.0	25.0	26.0
P02 (PSIA)	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0
T02 (F)	137.0	150.0	153.0
TH2 (F)	137.0	156.0	153.0
I D02 (IN)	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335

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TRANSDUCER
 ID (Q) IN BTU/50-FT-SEC, (P) IN PSIA

P005	0.039	0.042	0.037
P022	3.530	3.820	3.580
P023	3.910	4.140	3.820
OK01	28.900	-----	34.900
OK02	19.600	-----	17.500
OK03	8.100	8.910	8.060
OK04	3.640	3.820	3.400
OK05	-----	2.080	1.870
QL02	11.400	-----	11.200
QL03	6.790	7.000	6.450
QL04	3.250	3.260	3.090
QL05	2.090	2.020	2.050
QM01	6.550	5.800	6.050
QM02	4.090	4.210	4.160
QM03	3.700	4.050	4.500
QM04	2.430	2.120	2.230
QM05	2.050	2.240	2.210
Q008	2.160	2.660	1.760
Q010	3.410	2.380	3.740

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 23, LOG 23.5

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH TRANSIENT GIMBAL PATTERN DURING

SEPARATION

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	677	678	679
PC (PSIA)	722.0	706.0	719.0
ALT (MU HG A)	25.0	25.0	26.0
PO2 (PSIA)	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0
TO2 (F)	137.0	150.0	153.0
TH2 (F)	137.0	156.0	153.0
DO2 (IN)	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335

TRANSDUCER

ID (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

Q014	11.000	13.000	10.800
Q015	4.280	6.300	4.650
Q016	5.140	4.370	4.350
Q025	0.095	0.084	0.078
Q062	-----	177.000	192.000
Q063	195.000	200.000	199.000

CASE ----- RUN SERIES 23, LOG 23.6

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 465.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE AT 5 DEG
 AND LOW PC OF 465 PSIA

NORMALIZED TEST DATA

RUN NUMBER	680	681	682	683	684	685	686	687	688
PC (PSIA)	485.0	465.0	472.0	431.0	451.0	455.0	474.0	470.0	474.0
ALT (MU HG A)	22.0	27.0	18.0	28.0	24.0	25.0	24.0	27.0	24.0
PO2 (PSIA)	1250.0	1250.0	1250.0	1135.0	1235.0	1235.0	1235.0	1235.0	1235.0
PH2 (PSIA)	1250.0	1250.0	1250.0	1080.0	1180.0	1180.0	1180.0	1180.0	1180.0
TO2 (F)	156.0	155.0	156.0	150.0	153.0	153.0	157.0	155.0	143.0
TH2 (F)	156.0	146.0	153.0	143.0	148.0	156.0	163.0	158.0	156.0
DO2 (IN)	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319
DH2 (IN)	0.272	0.272	0.272	0.272	0.272	0.272	0.272	0.272	0.272

TRANSDUCER

TRANSDUCER OUTPUT

ID	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA
P005	0.026	0.032	---	---	---	0.035	0.032	0.031	0.030
P022	2.200	2.760	1.920	2.360	2.270	2.390	2.150	---	2.430
P023	2.290	2.200	2.010	2.260	2.520	2.380	2.400	2.310	2.500
QK01	25.600	24.700	26.900	24.400	27.200	27.900	23.500	25.000	22.500
QK02	12.900	14.800	14.000	13.000	15.200	14.200	13.100	13.600	11.100
QK03	5.880	6.390	6.200	5.700	---	---	---	---	---
QK04	2.650	2.650	2.560	2.370	---	2.660	2.360	2.670	2.160
QK05	1.200	1.450	1.280	1.400	1.540	1.430	1.280	1.380	1.280
QL02	9.120	8.390	8.470	7.950	8.960	9.560	7.560	8.900	7.810
QL03	4.800	4.520	4.630	4.200	5.000	4.800	3.930	4.950	4.130
QL04	2.400	1.220	2.070	2.040	2.470	2.250	1.960	2.280	1.960
QL05	1.420	1.480	1.380	1.400	1.540	1.430	1.280	---	1.280
QM01	4.200	3.490	4.140	5.490	4.840	4.600	3.140	3.460	3.630
QM02	2.970	2.900	3.050	1.940	3.190	3.370	2.550	2.870	2.460
QM03	3.130	2.850	2.560	2.580	2.980	2.860	2.360	2.670	2.260
QM04	1.760	1.880	1.770	1.830	1.750	1.940	1.670	1.880	1.570
QM05	1.670	1.660	1.670	1.610	1.650	1.330	1.470	1.680	1.570
QO08	1.770	---	1.770	1.620	1.340	1.530	1.470	1.880	1.580
QO10	2.140	---	1.870	1.830	1.650	---	1.670	1.680	1.960

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 23, LOG 23.6

GIMRAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 465.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE ENVIRONMENT WITH DUAL ACTUATOR FAILURE AT 5 DEG
 AND LOW PC OF 465 PSIA

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	680	681	682	683	684	685	686	687	688
PC (PSIA)	485.0	465.0	472.0	431.0	451.0	455.0	474.0	470.0	474.0
ALT (MU HG A)	22.0	27.0	18.0	28.0	24.0	25.0	24.0	27.0	24.0
PO2 (PSIA)	1250.0	1250.0	1250.0	1135.0	1235.0	1235.0	1235.0	1235.0	1235.0
PH2 (PSIA)	1250.0	1250.0	1250.0	1080.0	1180.0	1180.0	1180.0	1180.0	1180.0
1 TO2 (F)	156.0	155.0	156.0	150.0	153.0	153.0	157.0	155.0	143.0
2 TH2 (F)	156.0	146.0	153.0	143.0	148.0	156.0	163.0	158.0	156.0
26 DO2 (IN)	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319	0.319
1 DH2 (IN)	0.272	0.272	0.272	0.272	0.272	0.272	0.272	0.272	0.272

TRANSDUCER

ID	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA									
Q014	9.160	5.920	10.500	7.420	8.550	9.800	7.080	7.420	8.050	
Q015	3.280	-----	3.250	3.010	2.570	3.170	3.240	3.260	3.340	
Q016	3.830	3.410	4.140	2.900	2.680	4.200	3.340	3.360	3.340	
Q025	0.088	0.037	0.039	0.043	0.038	-----	0.063	-----	0.034	
Q062	131.000	126.000	116.000	142.000	143.000	147.000	132.000	151.000	150.000	
Q063	136.000	141.000	125.000	149.000	147.000	163.000	153.000	158.000	144.000	

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CASE ----- RUN SERIES 23, LOG 23.7

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 215.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE WALL ENVIRONMENT WITH DUAL ACTUATOR FAILURE AT 5 DEGREES INBOARD AND NOMINAL CHAMBER PRESSURE OF 215 PSIA

NORMALIZED TEST DATA

RUN NUMBER	689	690	691	692	693
PC (PSIA)	203.0	214.0	216.0	225.0	220.0
ALT (MU HG A)	27.0	26.0	20.0	25.0	17.0
P02 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0
PH2 (PSIA)	1245.0	1245.0	1245.0	1245.0	1245.0
T02 (F)	156.0	158.0	154.0	160.0	158.0
TH2 (F)	158.0	158.0	153.0	150.0	158.0
D02 (IN)	0.202	0.202	0.202	0.202	0.202
DH2 (IN)	0.167	0.167	0.167	0.167	0.167

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TRANSDUCER ID TRANSducer OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

P005	0.017	0.016	0.014	0.018	0.017
P022	1.120	1.110	1.650	1.000	0.900
P023	1.120	1.220	1.230	1.220	1.020
QK01	12.700	13.700	12.900	13.000	13.300
QK02	7.100	6.400	6.300	6.020	6.650
QK03	---	---	2.700	2.290	2.830
QK04	1.480	1.130	1.100	1.050	1.170
QK05	0.740	0.700	0.700	0.570	0.690
QL01	---	6.300	6.300	5.830	5.850
QL02	4.350	4.500	4.400	4.010	4.300
QL03	2.540	2.840	2.400	---	2.440
QL04	1.160	1.350	1.400	---	1.170
QL05	0.740	0.950	1.000	---	0.890
QM01	1.480	2.300	0.790	0.670	0.780
QM02	1.380	0.700	1.300	1.240	1.370
QM03	1.380	1.300	1.300	1.150	1.170
QM04	0.850	---	---	0.860	0.880
QM05	0.420	0.750	0.700	0.670	0.680
Q008	0.950	0.800	0.900	0.860	0.780

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 23, LOG 23.7

GIMBAL PATTERN --- 12 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 215.0 PSIA INTERSTAGE ----- OFF

REMARKS: CENTER ENGINE NOZZLE WALL ENVIRONMENT WITH DUAL ACTUATOR FAILURE AT 5 DEGREES INBOARD AND NOMINAL CHAMBER PRESSURE OF 215 PSIA

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	699	690	691	692	693
PC (PSIA)	203.0	214.0	216.0	225.0	220.0
ALT (MU HG A)	27.0	26.0	20.0	25.0	17.0
P02 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0
PH2 (PSIA)	1245.0	1245.0	1245.0	1245.0	1245.0
T02 (F)	156.0	158.0	154.0	160.0	158.0
TH2 (F)	158.0	158.0	153.0	150.0	158.0
D02 (IN)	0.202	0.202	0.202	0.202	0.202
DH2 (IN)	0.167	0.167	0.167	0.167	0.167

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA				
	699	690	691	692	693
Q010	0.950	0.700	0.800	0.860	0.780
Q014	3.140	2.700	2.200	2.200	2.540
Q015	2.010	1.900	2.300	2.490	2.150
Q016	2.540	1.200	1.500	1.430	1.270
Q025	0.016	0.014	0.015	-----	0.013
Q062	-----	85.000	93.000	93.000	88.000
Q063	84.000	81.000	80.000	77.000	75.000

CASE ----- RUN SERIES 24, LOG 24.1.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: TO DETERMINE THRUST CONE RADIATIVE HEATING.
 FLOW-SYMMETRY NOZZLES USED IN THIS TEST
 P20,21 ENGINE NO 1, P22,23 ENGINE NO 2, P29 ENGINE NO 5

NORMALIZED TEST DATA

RUN NUMBER	614	615	616
PC (PSIA)	739.0	699.0	722.0
ALT (MU HG A)	25.0	27.0	26.0
P02 (PSIA)	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0
T02 (F)	157.0	160.0	160.0
TH2 (F)	158.0	158.0	164.0
D02 (IN)	0.398	0.398	0.398
1 DH2 (IN)	0.335	0.335	0.335

TRANSDUCER OUTPUT
 (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

TRANSDUCER ID	614	615	616
P020	3.843	3.976	3.933
P021	3.924	4.034	3.961
P022	4.941	4.374	4.402
P023	4.200	4.149	4.355
P029	4.586	4.389	4.176
Q022	0.011	0.014	0.007
Q023	0.054	0.078	0.070
Q024	0.110	0.128	0.102
Q024R	-----	0.010	0.001
Q025	0.227	0.215	0.206
Q030	0.020	-----	0.011
Q031	0.041	0.042	0.050
Q032	0.074	0.078	0.058
Q033	0.015	0.000	0.030
Q044	0.134	0.153	0.132

CASE ----- RUN SERIES 25, LOG 25.1

GIMBAL PATTERN --- 3C MIXTURE RATIO ---- 5.50
NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: HEAT SHIELD PRESSURES WITH ENGINE DEFLECTIONS.
DEFLECTION PATTERN ROTATED 180 DEGREES

NORMALIZED TEST DATA

RUN NUMBER	617	618	619
PC (PSIA)	720.0	705.0	---
ALT (MU HG A)	14.0	30.0	27.0
P02 (PSIA)	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0
T02 (F)	160.0	161.0	160.0
TH2 (F)	160.0	160.0	158.0
DO2 (IN)	0.398	0.398	0.398
LDH2 (IN)	0.335	0.335	0.335

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TRANSDUCER
ID

TRANSDUCER OUTPUT
PSIA

P001	0.058	0.065	0.075
P002	0.059	0.054	---
P003	0.093	0.106	0.083
P005	0.070	---	0.060
P006	0.072	0.052	0.065
P007	0.036	0.034	0.034
P008	0.031	0.035	---
P011	0.065	0.071	0.063

CASE ----- RUN SERIES 25, LOG 25.2

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50

NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: HEAT SHIELD PRESSURES WITH ENGINE DEFLECTIONS.
DEFLECTION PATTERN ROTATED 180 DEGREES

NORMALIZED TEST DATA

RUN NUMBER	620	621	622
PC (PSIA)	722.0	---	---
ALT (MU HG A)	27.0	26.0	27.0
P02 (PSIA)	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0
T02 (F)	157.0	162.0	160.0
TH2 (F)	160.0	163.0	157.0
DO2 (IN)	0.398	0.398	0.398
DOH2 (IN)	0.335	0.335	0.335

TRANSDUCER OUTPUT PSIA

TRANSDUCER ID	---	---	---
P001	0.051	0.046	0.044
P002	0.039	0.041	0.052
P003	0.039	0.035	0.035
P005	0.032	0.033	0.036
P006	0.049	0.052	0.035
P007	0.031	0.030	0.033
P008	---	---	0.031
P011	---	---	0.035

CASE ----- RUN SERIES 26, LOG 26.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NULL NOZZLE HEATING RATES
 SKIRT GAGES MOUNTED ON ENGINE NO 5

NORMALIZED TEST DATA

RUN NUMBER	630	631	632	633	634	635
PC (PSIA)	719.0	701.0	---	702.0	---	---
ALT (MU HG A)	27.0	27.0	26.0	27.0	27.0	30.0
P02 (PSIA)	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0
T02 (F)	160.0	153.0	159.0	160.0	157.0	151.0
TH2 (F)	160.0	157.0	158.0	155.0	153.0	162.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
P005	---	0.030	0.032	0.030	0.029	0.025
P006	0.017	---	---	0.025	0.021	0.023
QK01	1.290	1.300	1.637	1.320	1.962	2.277
QK02	2.000	1.750	1.532	0.896	1.150	2.570
QK03	2.280	---	---	---	2.024	2.037
QK04	1.810	---	---	---	1.776	1.474
QK05	1.030	1.690	---	1.240	1.561	2.214
QK06	1.200	0.973	---	1.180	---	0.913
QL01	1.300	0.723	---	---	0.834	---
QL02	0.873	0.674	---	---	---	---
QL03	1.520	1.320	1.770	1.770	---	1.366
QL04	---	1.290	1.920	1.710	1.257	1.820
QL05	1.050	1.020	---	2.080	1.840	0.952
QL06	1.130	0.975	---	1.100	---	1.037
QM01	2.000	---	2.040	3.090	1.608	1.686
QM02	1.850	0.615	2.881	---	2.303	2.480
QM03	3.930	0.970	4.100	4.100	2.410	4.000
QM04	---	---	---	---	---	3.060
QM05	2.930	0.806	---	2.380	3.120	2.674

CASE ----- RUN SERIES 26, LOG 26.1

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO --- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NULL NOZZLE HEATING RATES
 SKIRT GAGES MOUNTED ON ENGINE NO 5

NORMALIZED TEST DATA
 (CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	630	631	632	633	634	635
PC (PSIA)	719.0	701.0	---	702.0	---	---
ALT (MU HG A)	27.0	27.0	26.0	27.0	27.0	30.0
PO2 (PSIA)	1270.0	1270.0	1270.0	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0	1220.0	1220.0	1220.0
TO2 (F)	160.0	153.0	159.0	160.0	157.0	151.0
1 TH2 (F)	160.0	157.0	158.0	155.0	153.0	162.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.325	0.335	0.335

TRANSDUCER ID	(Q) IN BTU/SQ-FT-SEC, (P) IN PSIA
QM06	2.470
Q003	4.600
Q004	5.650
Q008	5.730
Q016	2.680
Q017	2.220
Q025	0.140

CASE ----- RUN SERIES 26, LUG 26.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NULL NOZZLE WALL HEATING RATES.
 SKIRT GAGES MOUNTED ON NO 4 ENGINE

NORMALIZED TEST DATA

RUN NUMBER	636	637	638	639	640
PC (PSIA)	712.0	712.0	729.0	712.0	722.0
ALT (MU HG A)	30.0	25.0	26.0	25.0	36.0
PO2 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0
TO2 (F)	158.0	160.0	160.0	159.0	150.0
TH2 (F)	162.0	160.0	160.0	160.0	151.0
DO2 (IN)	0.398	0.398	0.398	0.398	0.398
DOH2 (IN)	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA				
	636	637	638	639	640
P005	0.031	0.035	0.064	---	---
P006	0.027	0.027	0.027	0.047	0.028
QK01	0.697	0.845	0.898	0.573	0.990
QK02	0.735	0.717	0.990	0.735	0.900
QK03	0.793	0.588	---	0.644	0.862
QK04	0.826	0.681	---	0.696	0.940
QK05	1.450	1.470	1.345	---	1.200
QK06	0.841	0.695	0.860	0.797	0.990
QL01	---	0.387	---	0.439	---
QL02	---	0.656	---	0.663	0.660
QL03	1.140	0.983	0.536	---	0.635
QL04	1.040	0.942	0.757	0.844	---
QL05	1.130	0.955	0.485	0.772	0.610
QL06	1.230	1.020	0.418	0.573	0.477
QM01	0.506	0.494	0.435	0.495	0.470
QM02	1.010	1.050	0.620	1.090	0.803
QM03	2.010	1.770	1.030	1.030	1.250
QM04	1.650	1.740	---	1.420	1.340
QM05	1.370	1.785	0.723	1.280	1.050

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 26, LOG 26.2

GIMBAL PATTERN --- NO DEFLECTION MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: NULL NOZZLE WALL HEATING RATES.
 SKIRT GAGES MOUNTED ON NO 4 ENGINE

NORMALIZED TEST DATA
 (CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	636	637	638	639	640
PC (PSIA)	712.0	712.0	729.0	712.0	722.0
ALT (MU HG A)	30.0	25.0	26.0	25.0	36.0
P02 (PSIA)	1285.0	1285.0	1285.0	1285.0	1285.0
P02 (PSIA)	1235.0	1235.0	1235.0	1235.0	1235.0
T02 (F)	158.0	160.0	160.0	159.0	150.0
TH2 (F)	162.0	160.0	160.0	160.0	151.0
D02 (IN)	0.398	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT	
	(Q) IN BTU/SQ-FT-SEC,	(P) IN PSIA
Q006	1.370	1.340
Q003	6.270	5.080
Q004	6.210	5.650
Q008	5.470	-----
Q009	-----	-----
Q010	3.560	4.680
Q014	1.700	1.730
Q025	0.160	0.133

CASE ----- RUN SERIES 27, LOG 27.1

GIMBAL PATTERN --- 3 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NOZZLE ENVIRONMENT WITH ACTUATOR FAILURES INBOARD.
 SKIRT GAGES MOUNTED ON ENGINE NO 4.

NORMALIZED TEST DATA

RUN NUMBER	641	642	643
PC (PSIA)	712.0	724.0	691.0
ALT (MU HG A)	30.0	28.0	32.0
PO2 (PSIA)	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0
TO2 (F)	142.0	150.0	153.0
TH2 (F)	153.0	153.0	153.0
DO2 (IN)	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335

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TRANSDUCER

TRANS-DUCER OUTPUT
 (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

ID	0.031	0.032	0.029
P005	0.029	0.029	0.032
P006	0.735	0.985	0.953
QK01	0.684	0.675	1.100
QK02	0.760	0.517	0.900
QK03	0.772	0.595	0.967
QK04	0.860	0.742	1.240
QK05	0.940	0.875	1.380
QK06	0.665	0.650	0.503
QL02	0.780	0.706	0.720
QL03	0.895	0.870	-----
QL04	0.830	0.790	0.750
QL05	0.940	0.885	0.850
QL06	0.590	0.550	0.450
QM01	1.200	1.310	1.120
QM02	1.800	1.970	1.480
QM03	1.710	1.910	1.610
QM04	1.510	1.620	1.380
QM05	-----	1.414	1.370

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 27, LOG 27.1

GIMBAL PATTERN --- 8 MIXTURE RATIO --- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NOZZLE ENVIRONMENT WITH ACTUATOR FAILURES INBOARD.
 SKIRT GAGES MOUNTED ON ENGINE NO 4.

NORMALIZED TEST DATA
 (CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	641	642	643
PC (PSIA)	712.0	724.0	691.0
ALT (MU HG A)	30.0	28.0	32.0
P02 (PSIA)	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0
T02 (F)	142.0	150.0	153.0
1 TH2 (F)	153.0	153.0	153.0
2 D02 (IN)	0.398	0.398	0.398
273 DH2 (IN)	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA		
Q003	7.280	6.350	6.870
Q004	6.450	5.920	6.700
Q008	8.150	4.230	8.920
Q009	7.240	7.730	-----
Q010	2.250	3.160	-----
Q014	2.010	1.760	-----
Q025	0.150	0.267	0.181

CASE ----- RUN SERIES 27, LOG 27.2.1

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NO 4 NOZZLE ENVIRONMENT WITH 3 DEGREE ACTUATOR FAILURE
 ON NO 4 ENGINE

NORMALIZED TEST DATA

RUN NUMBER	644	645	646
PC (PSIA)	718.0	691.0	705.0
ALT (MU HG A)	27.0	27.0	30.0
PD2 (PSIA)	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0
T02 (F)	140.0	157.0	151.0
TH2 (F)	147.0	156.0	151.0
DO2 (IN)	0.398	0.398	0.398
1 DH2 (IN)	0.335	0.335	0.335

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TRANSDUCER ID (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

TRANSDUCER ID	(Q) IN BTU/SQ-FT-SEC	(P) IN PSIA
P005	0.034	0.035
P006	0.030	0.033
QK01	1.260	0.990
QK02	1.380	0.880
QK03	1.230	0.900
QK04	1.270	0.970
QK05	1.530	1.260
QK06	1.340	1.450
QL02	0.750	0.630
QL03	0.790	0.630
QL04	0.910	0.790
QL05	0.840	0.850
QL06	1.040	0.970
QM01	0.310	0.240
QM02	0.460	0.920
QM03	0.830	1.330
QM04	1.020	1.290
QM05	0.860	1.230
QM06	-----	1.040

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CASE ----- RUN SERIES 27, LOG 27.2.1

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: ON NO 4 ENGINE OUTBOARD ENGINE NO 4 NOZZLE ENVIRONMENT WITH 3 DEGREE ACTUATOR FAILURE

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	644	645	646
PC (PSIA)	718.0	691.0	705.0
ALT (MU HG A)	27.0	27.0	30.0
PO2 (PSIA)	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0
T02 (F)	140.0	157.0	151.0
1TH2 (F)	147.0	156.0	151.0
2D02 (IN)	0.398	0.398	0.398
275DH2 (IN)	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA		
Q003	7.550	-----	7.900
Q004	5.300	7.420	7.140
Q008	-----	12.200	11.000
Q009	8.740	11.500	9.750
Q010	2.420	2.490	2.190
Q014	-----	5.460	4.730
Q025	0.179	0.212	0.230

CASE ----- RUN SERIES 27, LOG 27.2.2

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NO 1 NOZZLE ENVIRONMENT WITH 3 DEGREE ACTUATOR FAILURE
 ON NO 4 ENGINE

NORMALIZED TEST DATA

RUN NUMBER	647	648	649
PC (PSIA)	696.0	648.0	649.0
ALT (MU HG A)	27.0	29.0	31.0
P02 (PSIA)	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0
T02 (F)	159.0	153.0	156.0
TH2 (F)	158.0	153.0	152.0
D02 (IN)	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335

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TRANSDUCER ID (O) IN BTU/SQ-FT-SEC, (P) IN PSIA

TRANSDUCER OUTPUT

P005	0.035	0.041
P006	0.029	0.033
P006	0.029	0.033
QK01	1.410	1.360
QK02	1.610	1.700
QK03	1.150	1.340
QK04	1.160	1.330
QK05	1.310	-----
QK06	1.740	-----
QL03	-----	4.280
QL04	-----	4.300
QL05	-----	3.810
QL06	-----	3.120
QM01	0.980	-----
QM02	2.180	2.560
QM03	2.620	3.520
QM04	2.960	2.990
QM05	-----	-----
QM06	-----	4.000

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(TABLE CONTINUED ON THE NEXT PAGE)

CASE ----- RUN SERIES 27, LOG 27.2.2

GIMBAL PATTERN --- 6A MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE NO 1 NOZZLE ENVIRONMENT WITH 3 DEGREE ACTUATOR FAILURE
 ON NO 4 ENGINE

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	647	648	649
PC (PSIA)	696.0	648.0	649.0
ALT (MU HG A)	27.0	29.0	31.0
P02 (PSIA)	1270.0	1270.0	1270.0
PH2 (PSIA)	1220.0	1220.0	1220.0
T02 (F)	159.0	153.0	156.0
TH2 (F)	158.0	153.0	152.0
D002 (IN)	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335

TRANSDUCER

TRANSDUCER OUTPUT
 (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

TRANSDUCER ID	Q	P
Q010	4.020	3.720
Q013	5.420	5.440
Q014	2.080	2.760
Q015	4.850	7.850
Q019	2.690	3.480
Q025	0.039	0.065

CASE ----- RUN SERIES 27, LOG 27.3

GIMBAL PATTERN --- 10 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE WALL ENVIRONMENT WITH ACTUATOR FAILURES.
 SKIRT GAGES ON NOZZLE 4.

NORMALIZED TEST DATA

RUN NUMBER	661	662	663	664
PC (PSIA)	694.0	748.0	738.0	743.0
ALT (MU HG A)	13.0	23.0	28.0	25.0
P02 (PSIA)	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0
T02 (F)	148.0	156.0	151.0	137.0
TH2 (F)	155.0	153.0	155.0	146.0
D02 (IN)	0.398	0.398	0.398	0.398
DH2 (IN)	0.335	0.335	0.335	0.335

TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA

TRANSDUCER ID	661	662	663	664
P005	0.093	0.032	0.027	0.034
P006	-----	0.038	0.027	0.045
QK01	1.220	0.364	0.600	0.890
QK02	1.390	1.396	0.530	0.900
QK03	1.280	0.373	0.800	0.515
QK04	1.070	0.460	0.850	0.510
QK05	1.390	0.700	1.340	0.850
QK06	-----	0.860	0.510	0.915
QL02	1.340	0.575	0.620	0.462
QL03	1.090	0.630	0.407	0.500
QL04	1.050	-----	0.660	0.693
QL05	1.260	0.920	0.835	0.810
QL06	0.835	1.310	0.835	1.020
QM01	0.680	0.370	0.327	1.170
QM02	0.970	1.570	1.020	0.400
QM03	1.590	1.770	1.730	1.650
QM04	2.500	1.630	1.350	1.357
QM05	-----	1.150	1.500	1.280
QM06	-----	1.340	1.150	-----

CASE ----- RUN SERIES 27, LOG 27.3

GIMBAL PATTERN --- 10 MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: OUTBOARD ENGINE WALL ENVIRONMENT WITH ACTUATOR FAILURES.
 SKIRT GAGES ON NOZZLE 4.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	661	662	663	664
PC (PSIA)	694.0	748.0	738.0	743.0
ALT (MU HG A)	13.0	23.0	28.0	25.0
P02 (PSIA)	1285.0	1285.0	1285.0	1285.0
PH2 (PSIA)	1235.0	1235.0	1235.0	1235.0
T02 (F)	148.0	156.0	151.0	137.0
1TH2 (F)	155.0	153.0	155.0	146.0
2002 (IN)	0.398	0.398	0.398	0.398
20H2 (IN)	0.335	0.335	0.335	0.335

TRANSDUCER ID	TRANSDUCER OUTPUT	
	(Q) IN BTU/SQ-FT-SEC, (P)	IN PSIA
Q003	3.200	4.700
Q004	6.000	7.100
Q008	4.080	7.100
Q009	6.900	7.450
Q010	3.400	4.050
Q014	2.100	2.060
Q025	0.235	0.044

CASE ----- RUN SERIES 28, LOG 28.1

GIMBAL PATTERN --- 2B MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: ENVIRONMENT OF THE INOPERATIVE OUTBOARD ENGINE WITH THE INOPERATIVE
 ENGINE DEFLECTED. DOUBTFUL WHETHER ENGINE WAS DEFLECTED DURING THE TEST.

NORMALIZED TEST DATA

RUN NUMBER	672	673	674	675	676
PC (PSIA)	734.0	686.0	726.0	726.0	726.0
ALT (MU HG A)	25.0	26.0	25.0	27.0	25.0
P02 (PSIA)	1260.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1345.0	1345.0	1345.0	1345.0	1345.0
T02 (F)	148.0	153.0	156.0	143.0	153.0
TH2 (F)	150.0	150.0	156.0	156.0	156.0
D02 (IN)	0.361	0.361	0.361	0.361	0.361
DH2 (IN)	0.291	0.291	0.291	0.291	0.291

TRANSDUCER ID	TRANSDUCER OUTPUT (Q) IN BTU/SQ-FT-SEC, (P) IN PSIA					
	672	673	674	675	676	
P005	0.013	-----	0.010	0.010	-----	-----
P006	0.011	-----	0.039	-----	0.009	-----
QK01	-----	0.540	0.490	0.490	0.510	-----
QK02	-----	0.650	0.490	-----	0.550	-----
QK03	0.370	0.610	0.560	0.430	0.400	-----
QK04	0.360	0.660	0.470	0.370	0.340	-----
QK05	0.450	0.600	0.630	0.390	-----	-----
QK06	0.580	0.680	0.740	0.430	-----	-----
QL02	0.390	0.500	-----	0.280	0.530	-----
QL03	0.490	0.760	0.560	0.470	0.610	-----
QL04	0.420	0.800	0.480	0.480	0.350	-----
QL05	0.590	0.850	0.870	0.390	0.520	-----
QL06	0.690	1.180	0.770	0.480	0.800	-----
QM01	0.170	0.230	0.320	0.300	0.310	-----
QM02	0.220	0.270	0.300	0.085	0.320	-----
QM03	0.300	0.340	0.290	0.300	0.300	-----
QM04	0.320	0.340	0.315	0.300	0.350	-----
QM05	0.440	0.460	0.330	0.350	0.340	-----
QM06	0.430	0.520	0.360	0.410	0.390	-----

CASE ----- RUN SERIES 28, LOG 28.1

GIMBAL PATTERN --- 2B MIXTURE RATIO ---- 5.50
 NOMINAL PC ----- 715.0 PSIA INTERSTAGE ----- OFF

REMARKS: ENVIRONMENT OF THE INOPERATIVE OUTBOARD ENGINE WITH THE INOPERATIVE
 ENGINE DEFLECTED. DOUBTFUL WHETHER ENGINE WAS DEFLECTED DURING THE TEST.

NORMALIZED TEST DATA

(CONTINUED FROM PRECEDING PAGE)

RUN NUMBER	672	673	674	675	676
PC (PSIA)	734.0	686.0	726.0	726.0	726.0
ALT (MU HG A)	25.0	26.0	25.0	27.0	25.0
PO2 (PSIA)	1260.0	1260.0	1260.0	1260.0	1260.0
PH2 (PSIA)	1345.0	1345.0	1345.0	1345.0	1345.0
TO2 (F)	148.0	153.0	156.0	143.0	153.0
TH2 (F)	150.0	150.0	156.0	156.0	156.0
DO2 (IN)	0.361	0.361	0.361	0.361	0.361
DH2 (IN)	0.291	0.291	0.291	0.291	0.291

TRANSDUCER ID	TRANSDUCER OUTPUT				
	(Q) IN	IN	RTU/SQ-FT-SEC, (P) IN	PSIA	
QN01	---	---	---	0.015	---
QN03	---	---	0.037	0.038	---
QN09	7.400	8.300	6.070	6.610	---
QN15	---	5.160	7.950	---	---
QN25	---	---	0.018	---	---



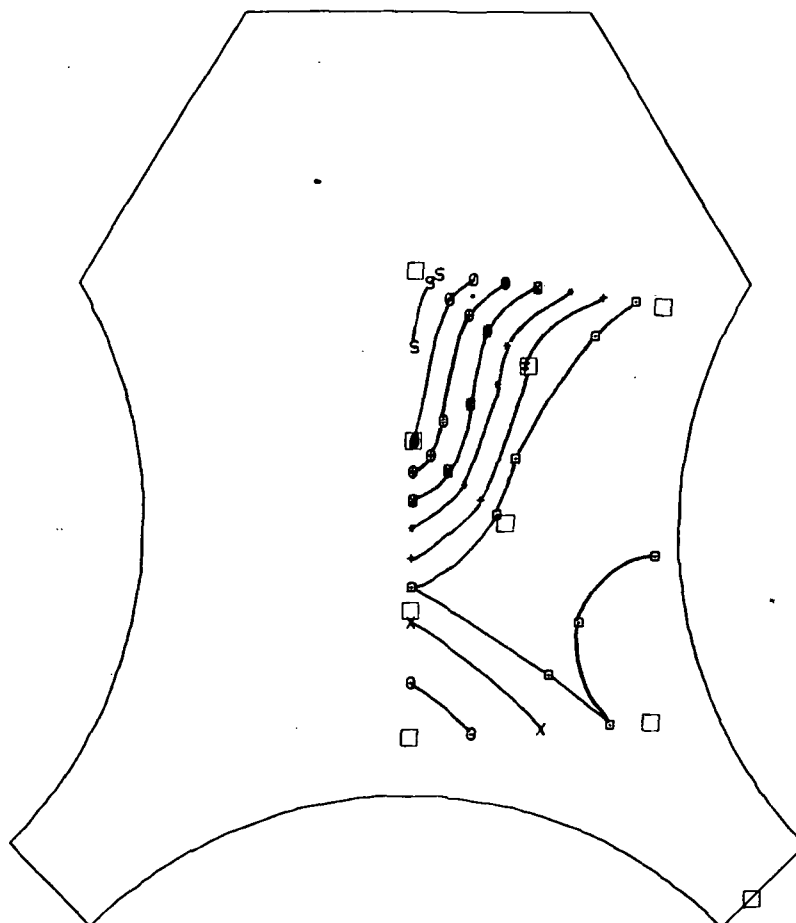
4.0 HEAT SHIELD CONSTANT HEATING RATE CONTOURS

Constant heating rate contours to the heat shield are presented in this section. The contours represent the mean $+ 3\sigma$ values tabulated in Section 3.0. Linear interpolation, between the gage locations indicated, was used to obtain the constant heating rate contours.

Contours were plotted only for the test cases where sufficient heat shield instrumentation was recorded. The units of the heating rates are BTU/ft²-sec.

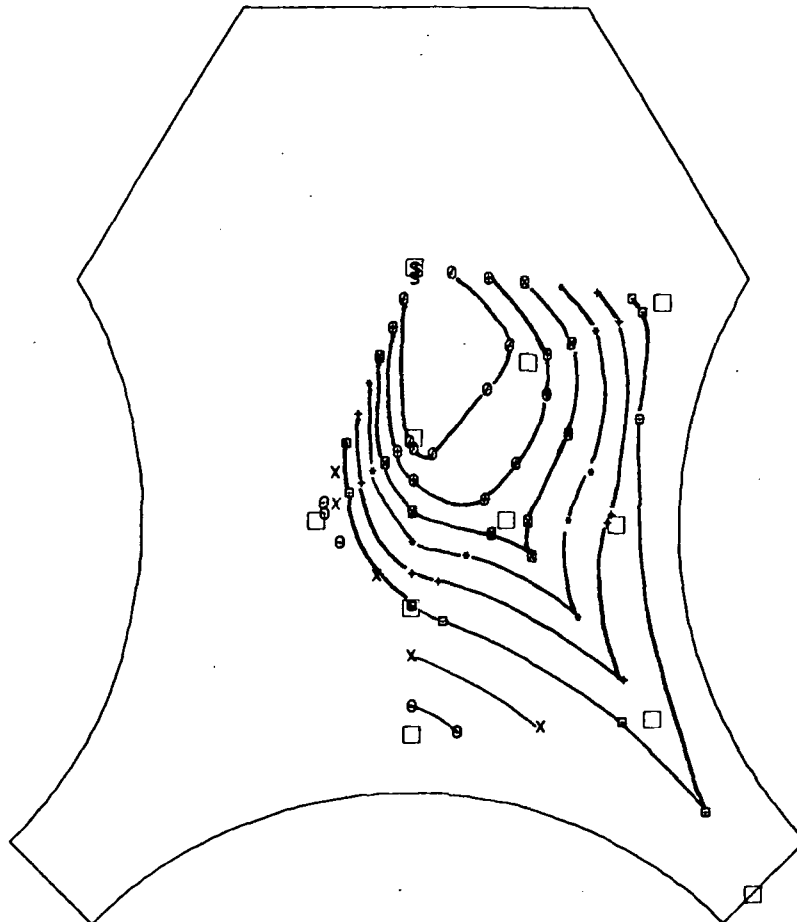
RUN SERIES 1. LOG 1.5 MEAN + 3 SIGMA

NO DEFLECTIONS
O/F = 5.0
Pc = 632 PSIA
INTERSTAGE OFF



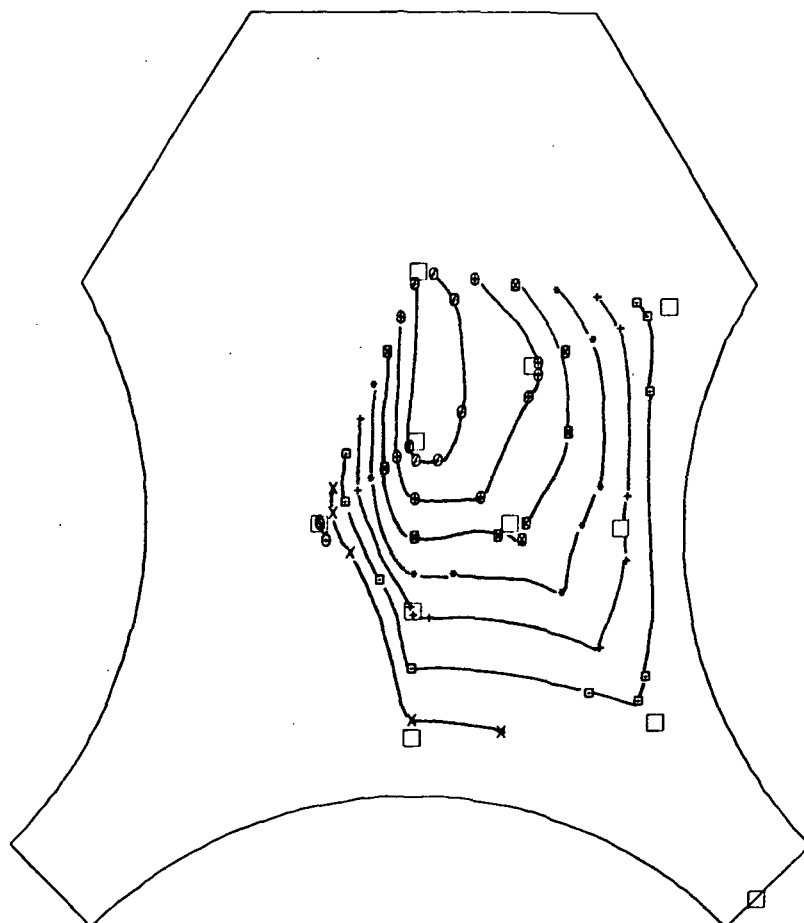
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
θ	1.5	■	4.0
x	2.0	●	4.5
□	2.5	○	5.0
+	3.0	S	5.5
•	3.5		

NO DEFLECTIONS
 $O/F = 5.5$
 $P_c \approx 715$ PSIA
 INTERSTAGE OFF



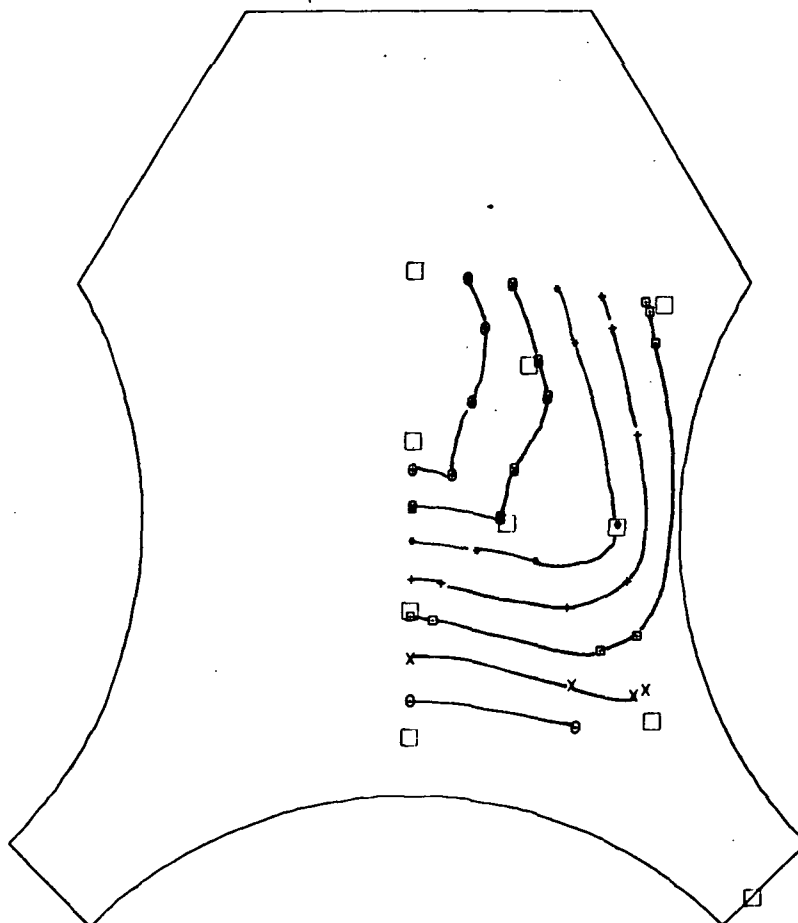
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	2.5	■	5.0
x	3.0	●	5.5
◻	3.5	◉	6.0
◆	4.0	S	6.5
•	4.5		

NO DEFLECTIONS
O/F = 4.50
Pc = 546 PSIA
INTERSTAGE OFF



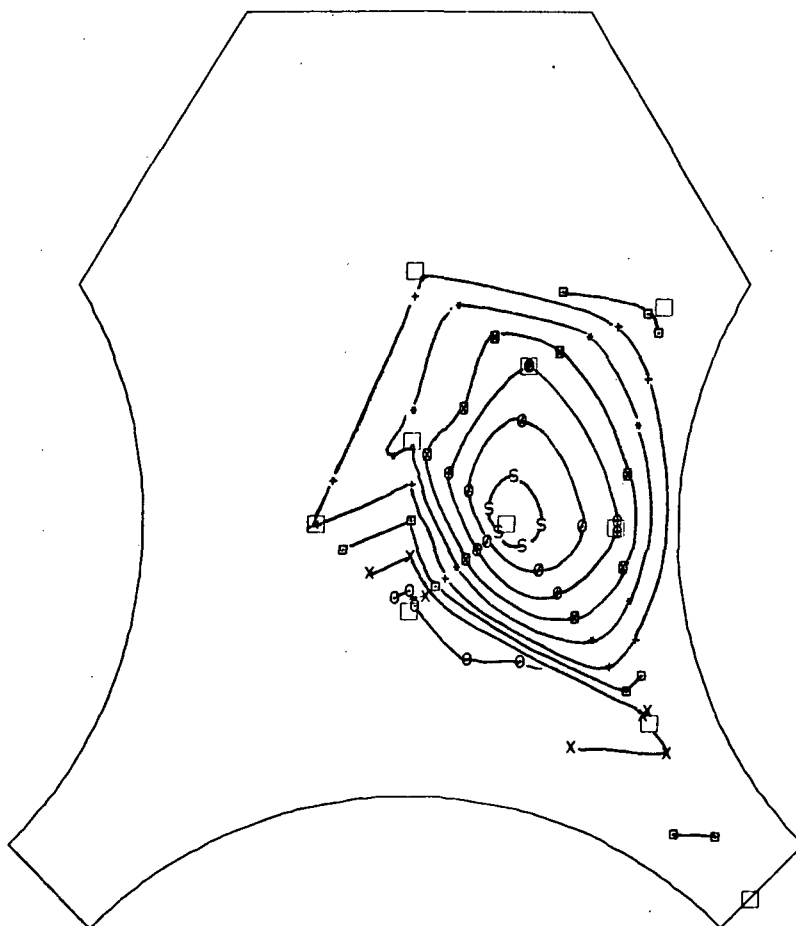
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	1.5	■	4.0
x	2.0	●	4.5
+	2.5	⊙	5.0
•	3.0		
	3.5		

NO DEFLECTIONS
O/F = 5.5
Pc = 715 PSIA
INTERSTAGE ON



PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	3.0	■	5.5
x	3.5	●	6.0
■	4.0		
+	4.5		
•	5.0		

GIMBAL PATTERN 3C
 O/F = 5.5
 P_c = 715 PSIA
 INTERSTAGE OFF



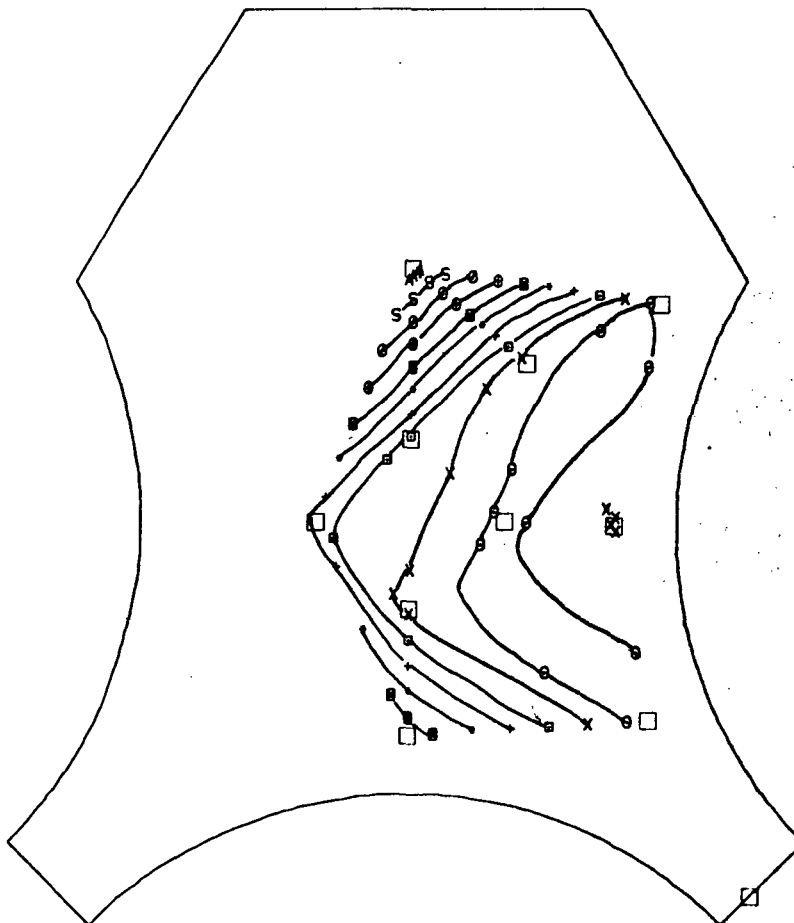
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	5.0	■	10.0
x	6.0	●	11.0
■	7.0	○	12.0
+	8.0	S	13.0
•	9.0		

GIMBAL PATTERN 2A

O/F = 5.0

Pc = 632 PSIA

INTERSTAGE OFF



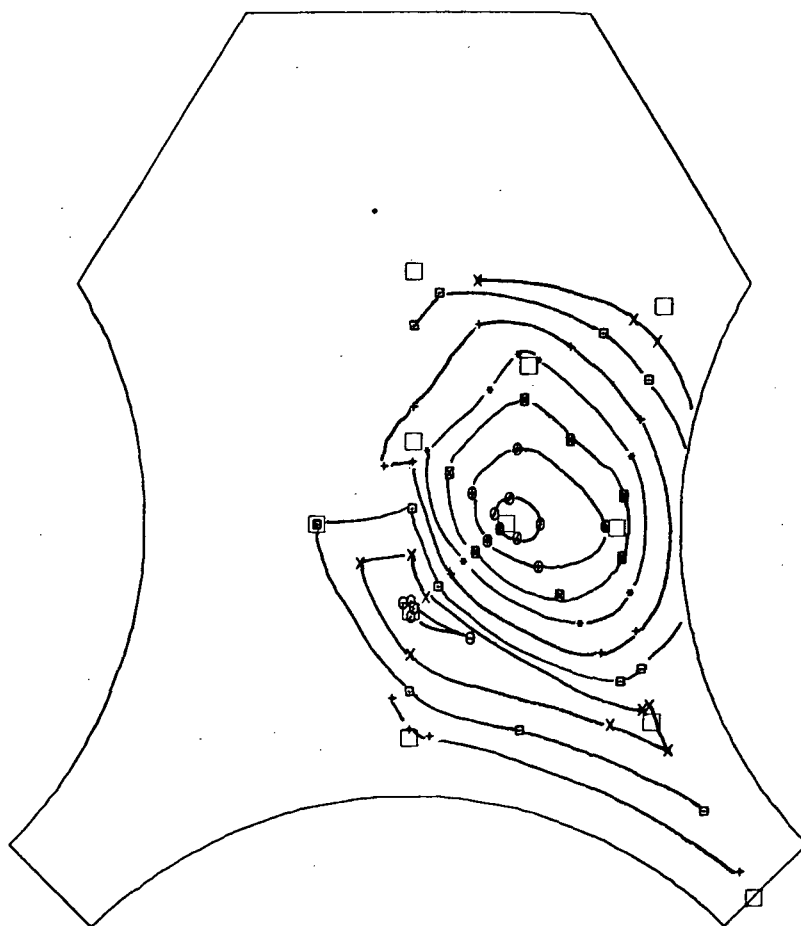
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	3.0	■	5.5
×	3.5	●	6.0
□	4.0	●	6.5
+	4.5	S	7.0
•	5.0	A	7.5

GIMBAL PATTERN 3C

O/F = 5.0

Pc = 632 PSIA

INTERSTAGE OFF



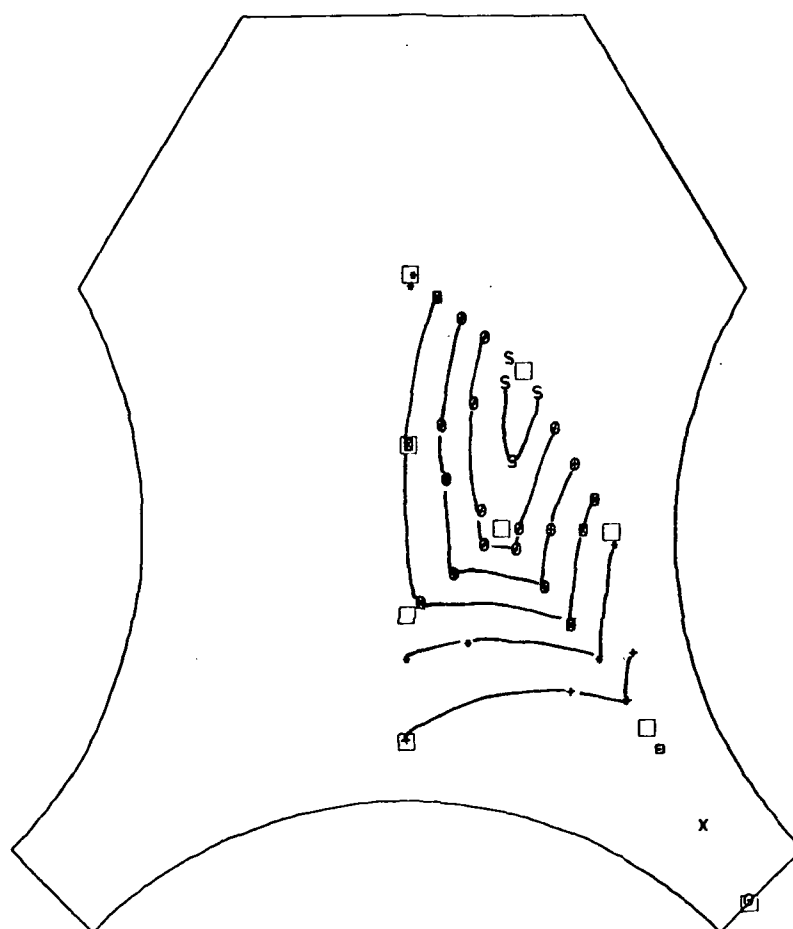
PLOTting SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	5.0	■	10.0
x	6.0	●	11.0
■	7.0	●	12.0
+	8.0		
•	9.0		

GIMBAL PATTERN 2

O/F = 5.5

Pc = 715 PSIA

INTERSTAGE OFF



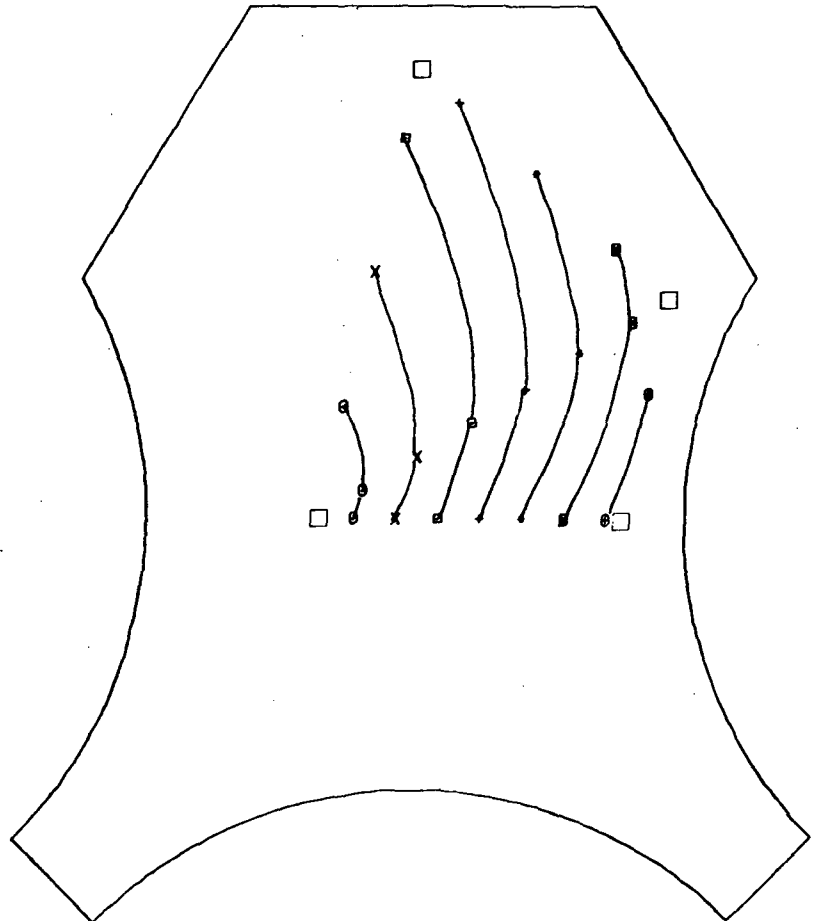
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	2.0	■	7.0
x	3.0	●	8.0
□	4.0	◊	9.0
+	5.0	S	10.0
•	6.0		

GIMBAL PATTERN 2

O/F = 5.5

Pc = 715 PSIA

INTERSTAGE OFF



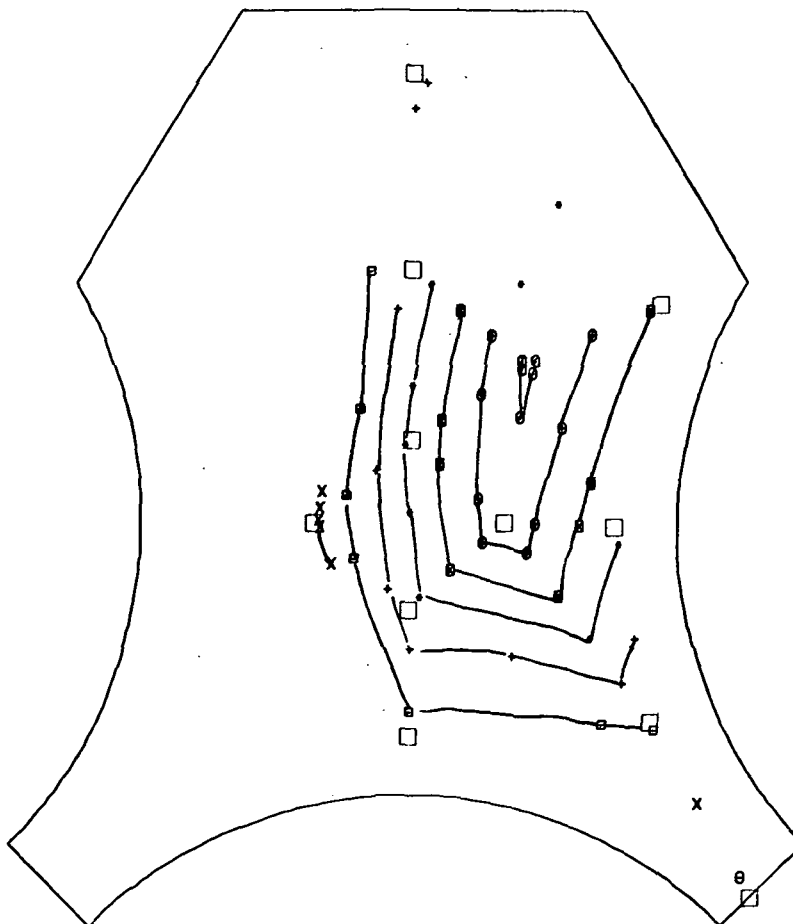
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	4.0	■	6.5
x	4.5	●	7.0
+	5.0		
•	5.5		
	6.0		

GIMBAL PATTERN 2

O/F = 5.5

Pc = 715 PSIA

INTERSTAGE ON



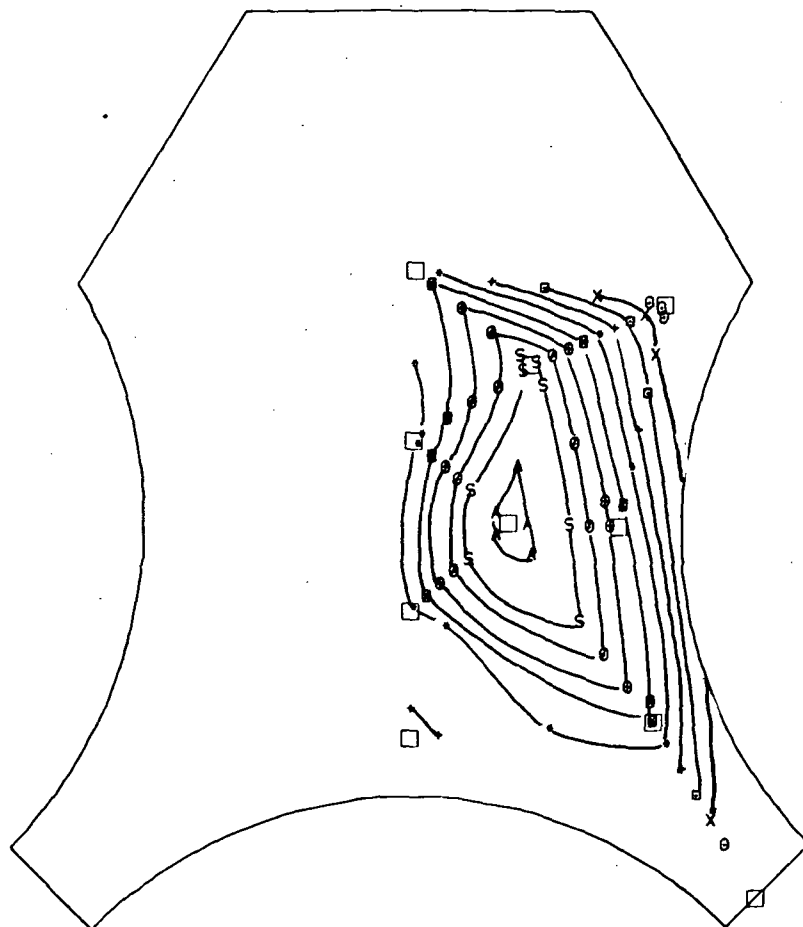
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
θ	2.0	■	7.0
x	3.0	●	8.0
■	4.0	○	9.0
+	5.0		
•	6.0		

GIMBAL PATTERN 5

O/F = 5.0

Pc = 632 PSIA

INTERSTAGE OFF



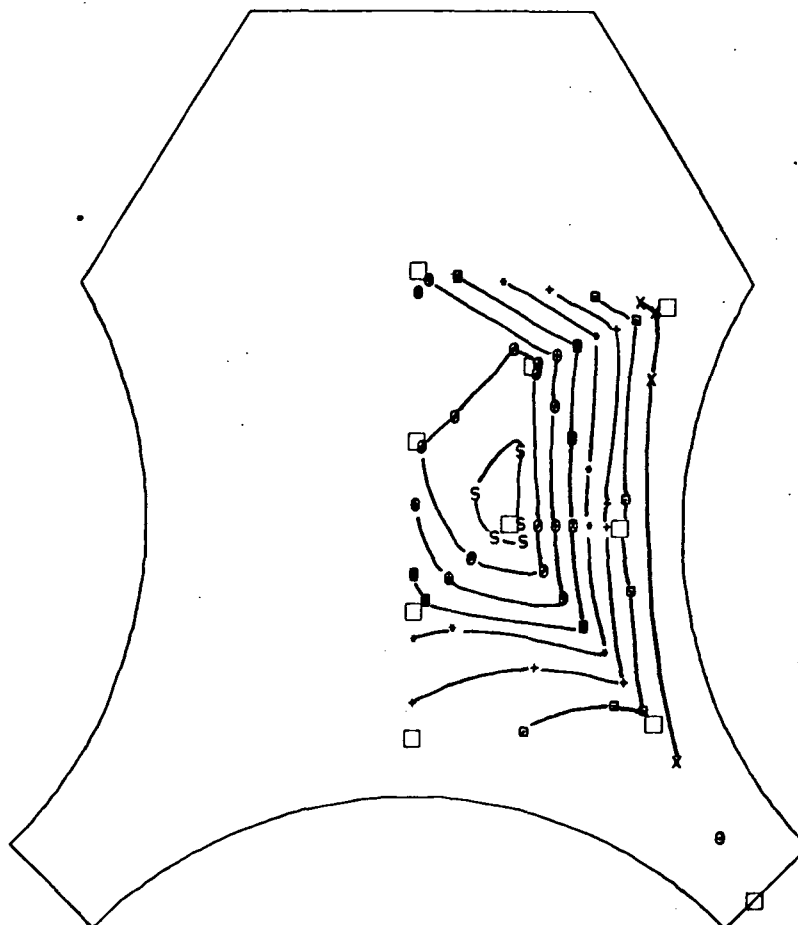
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
0	5.0	0	7.5
x	5.5	0	8.0
■	6.0	0	8.5
+	6.5	S	9.0
•	7.0	A	10.0

GIMBAL PATTERN 4

O/F = 5.0

Pc = 632 PSIA

INTERSTAGE OFF



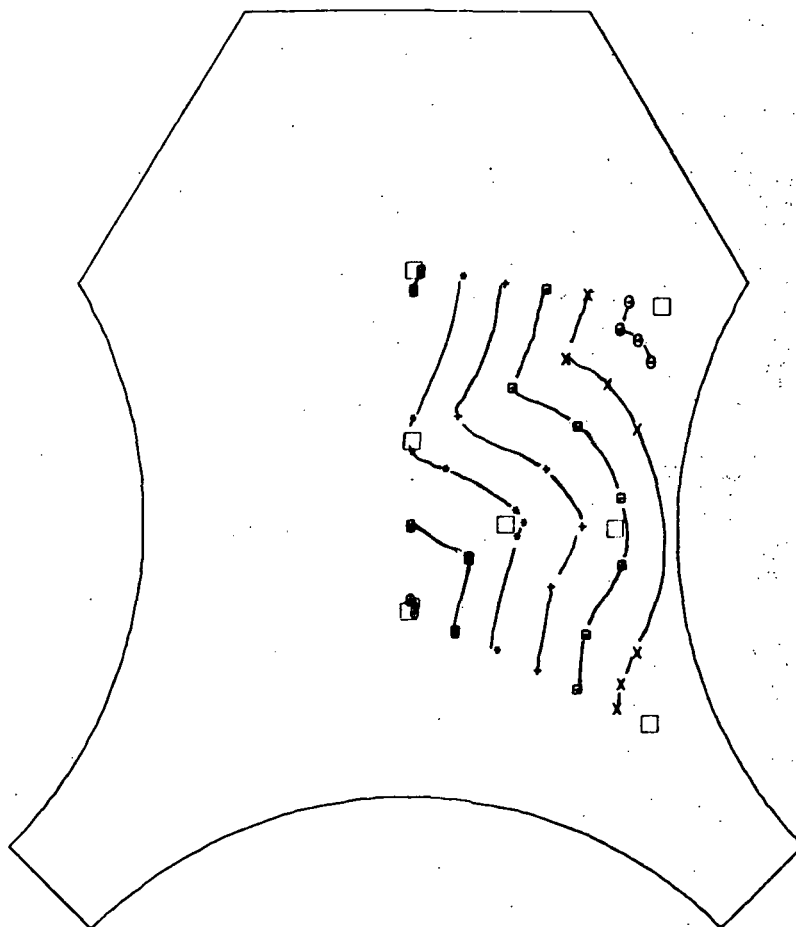
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	3.0	■	8.0
x	4.0	●	9.0
□	5.0	●	10.0
+	6.0	S	11.0
•	7.0		

GIMBAL PATTERN 4A

O/F = 5.0

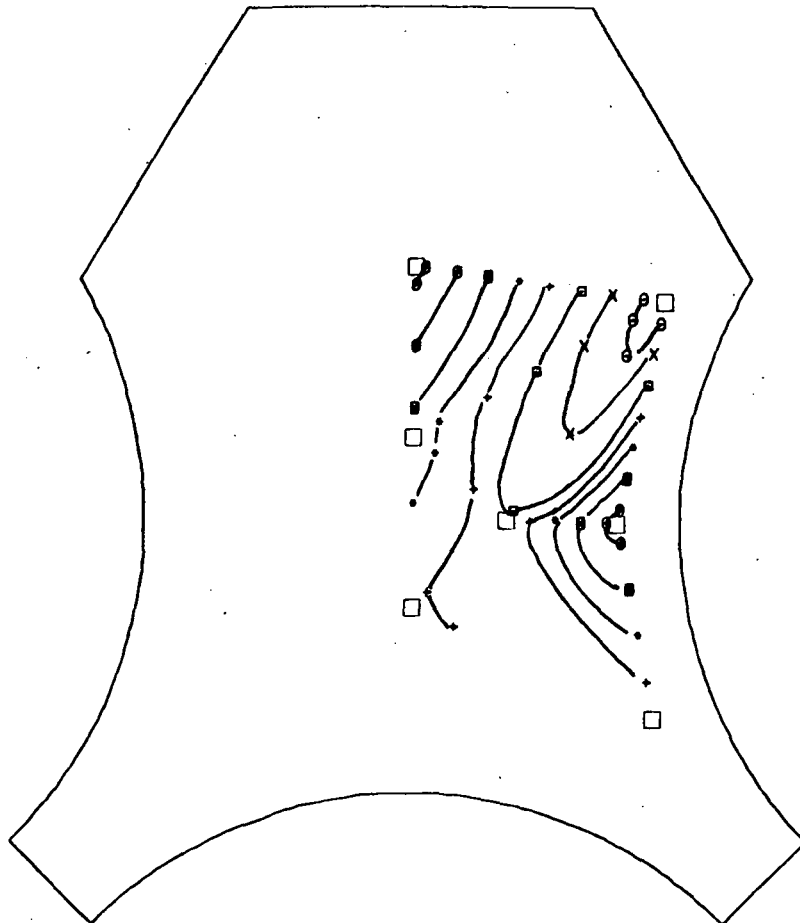
Pc = 632 PSIA

INTERSTAGE OFF



PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	2.0	●	4.5
×	2.5	●	5.0
■	3.0		
◆	3.5		
•	4.0		

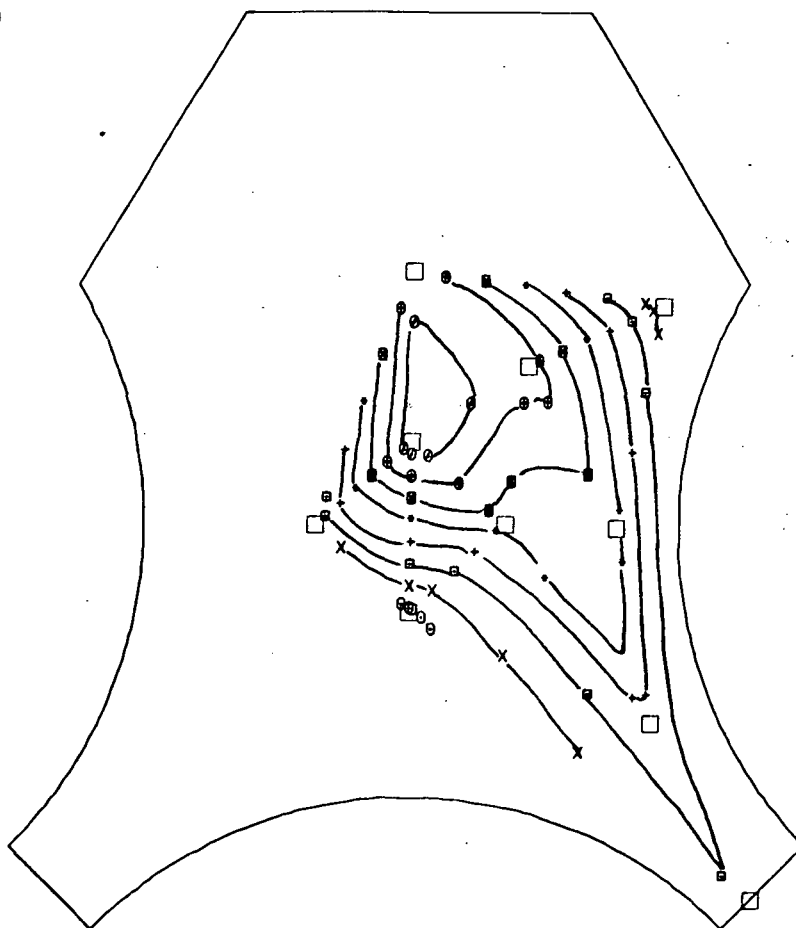
NO DEFLECTION
O/F = 5.0
Pc = 632 PSIA
INTERSTAGE OFF



PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	1.5	■	4.0
x	2.0	●	4.5
●	2.5	○	5.0
+	3.0		
•	3.5		

NO DEFLECTION
 $\theta/F = 5.0$
 $P_c = 632$ PSIA
 INTERSTAGE OFF

S-IV TYPE HEAT SHIELD



PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	2.0	●	4.5
x	2.5	⊙	5.0
⊖	3.0	⦿	5.5
+	3.5		
•	4.0		

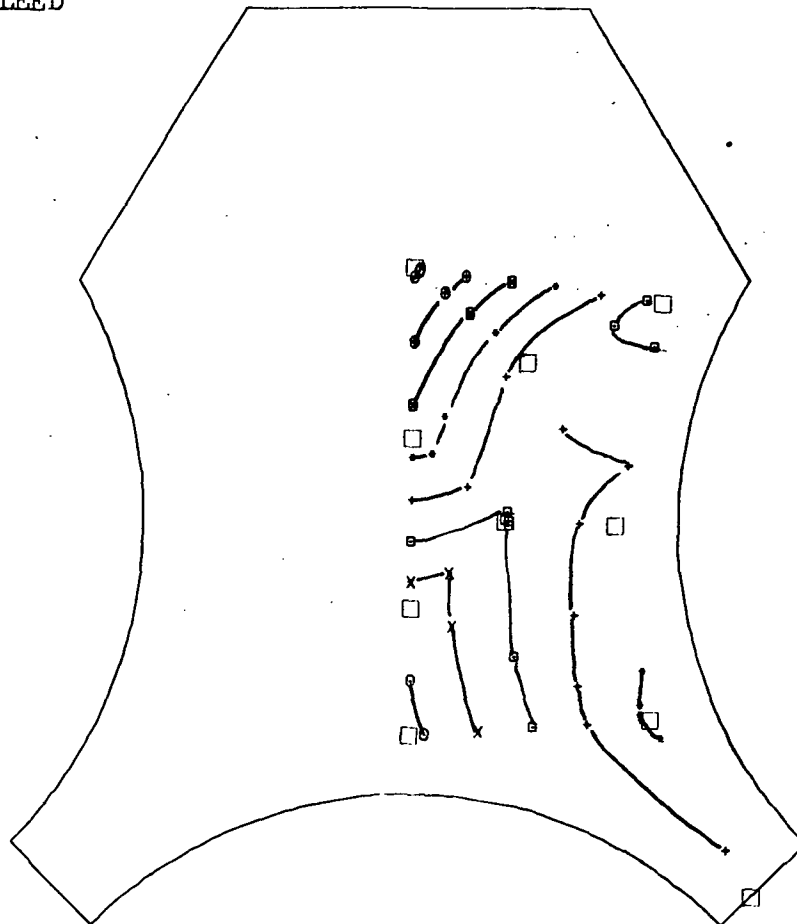
NO DEFLECTION

O/F = 5.0

Pc = 632 PSIA

INTERSTAGE OFF

WITH BOUNDARY LAYER BLEED



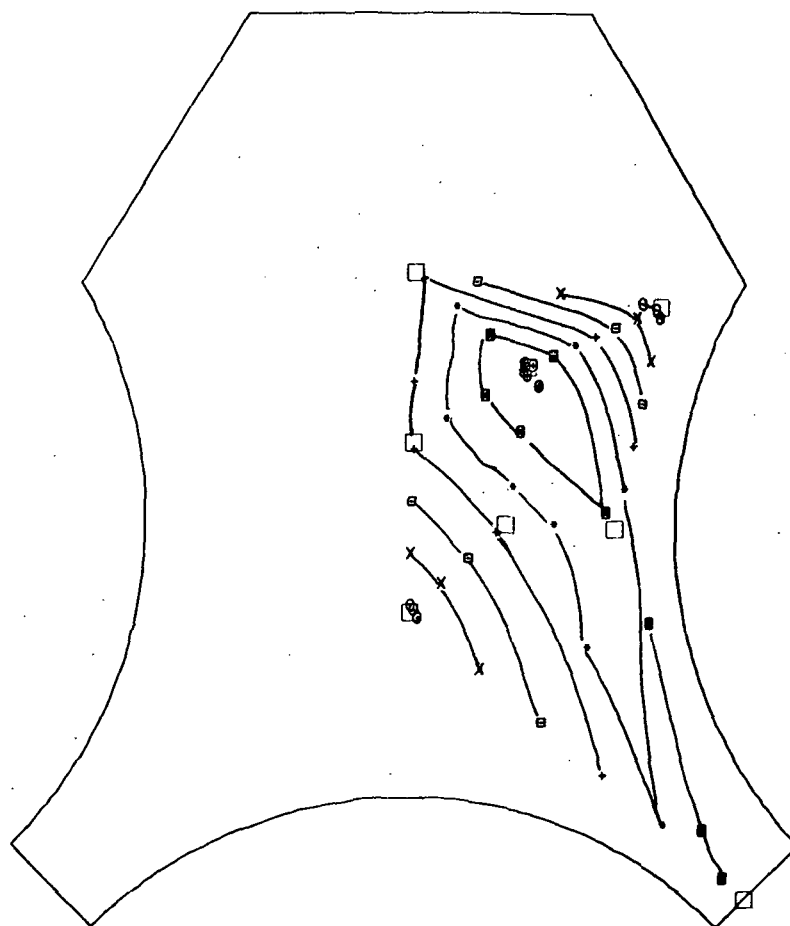
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	1.5	●	4.0
x	2.0	●	4.5
□	2.5	●	5.0
+	3.0		
•	3.5		

GIMBAL PATTERN 4A-a

O/F = 5.5

Pc = 715 PSIA

INTERSTAGE OFF



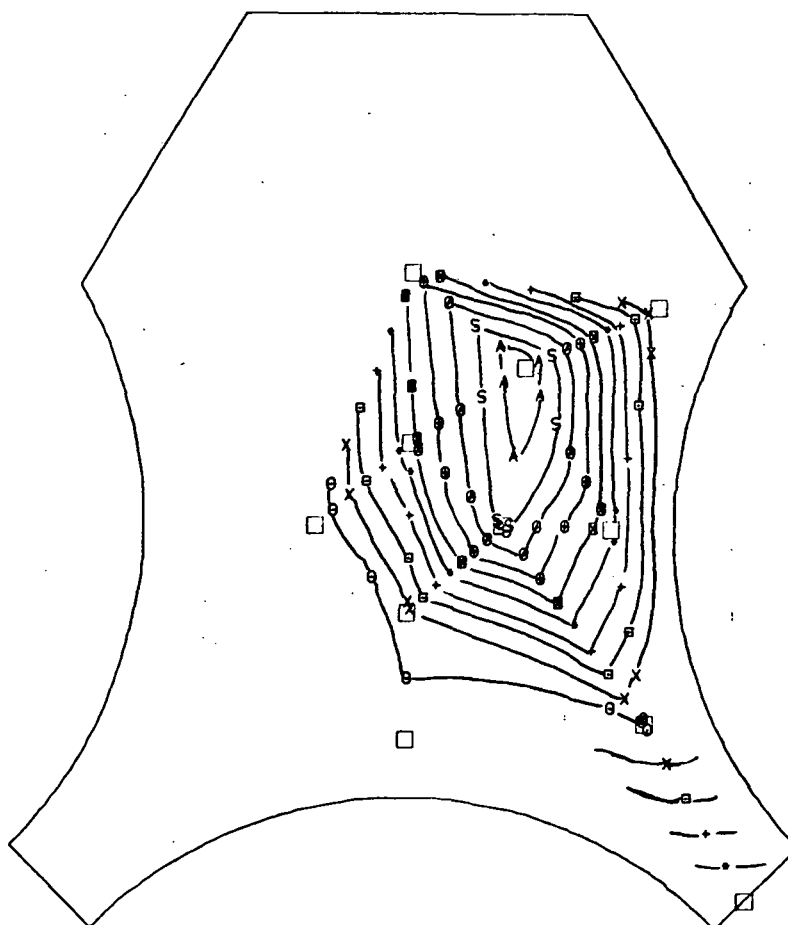
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	5.0	■	15.0
x	7.0	●	17.0
◻	9.0		
+	11.0		
•	13.0		

GIMBAL PATTERN 4A-a

O/F = 5.0

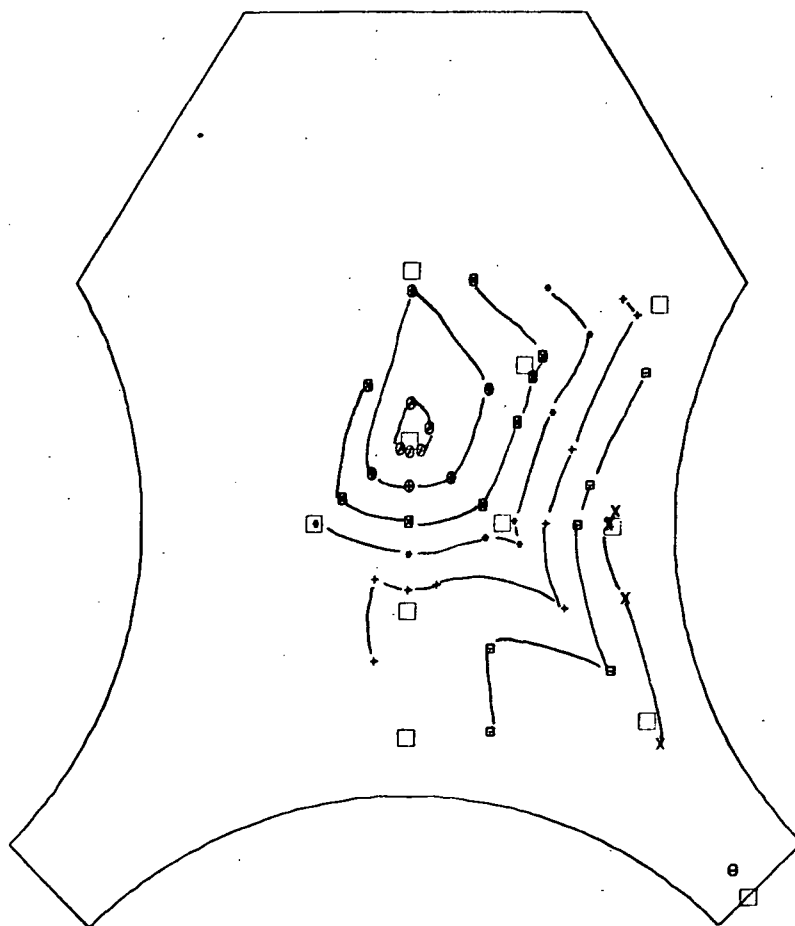
Pc = 632 PSIA

INTERSTAGE OFF



PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
θ	3.0	■	8.0
x	4.0	●	9.0
■	5.0	●	10.0
+	6.0	S	11.0
•	7.0	A	12.0

GIMBAL PATTERN 4A-b
 O/F = 5.0
 Pc = 632 PSIA
 INTERSTAGE OFF



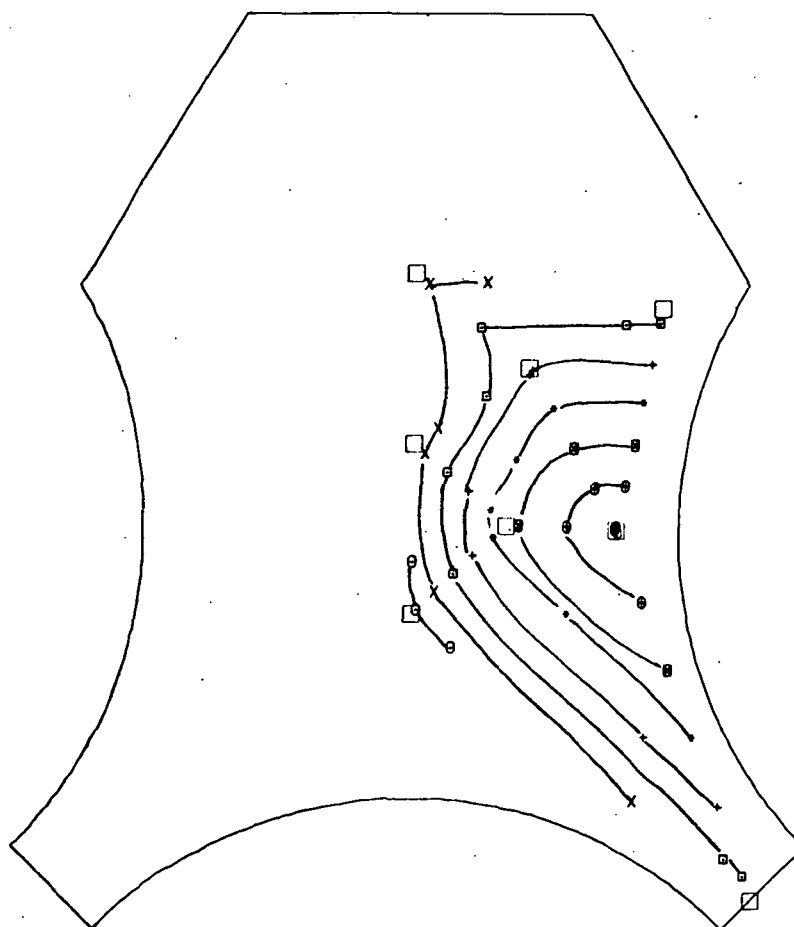
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	1.0	■	6.0
x	2.0	●	7.0
◻	3.0	●	8.0
+	4.0		
•	5.0		

GIMBAL PATTERN 7

O/F = 5.0

Pc = 632 PSIA

INTERSTAGE OFF



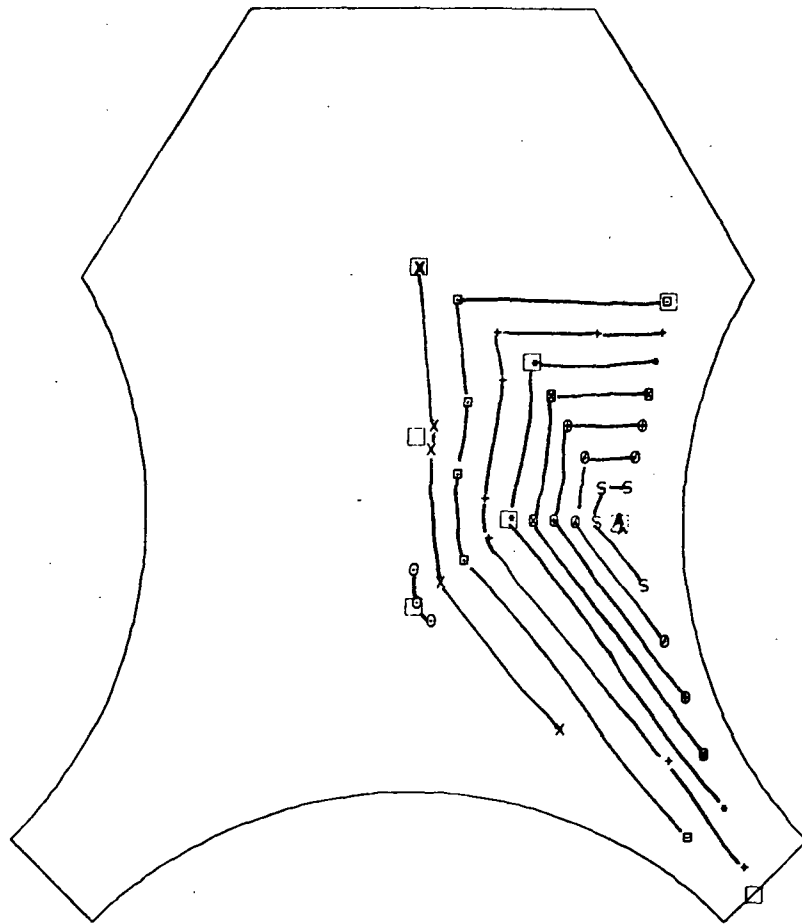
PLOTING SYMBOL KEY			
SYMBOL	ODOT	SYMBOL	ODOT
⊖	4.0	⊞	14.0
x	6.0	⊙	16.0
⊖	8.0	⊙	18.0
+	10.0		
•	12.0		

GIMBAL PATTERN 7

O/F = 5.5

Pc = 715 PSIA

INTERSTAGE OFF



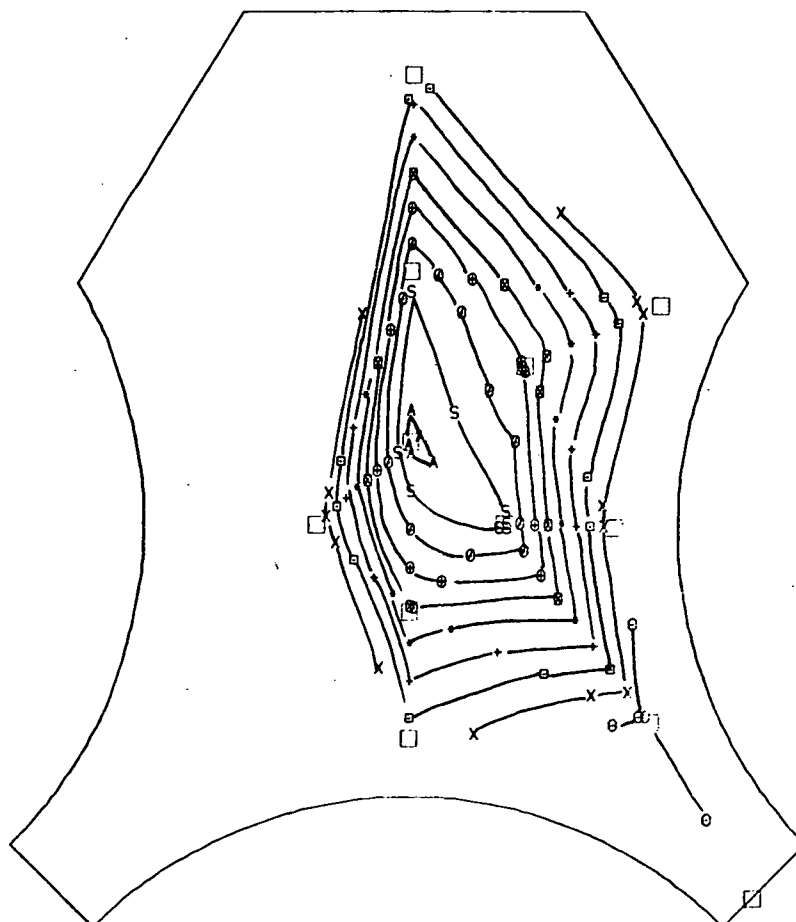
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
Ø	4.0	■	14.0
X	6.0	●	16.0
□	8.0	○	18.0
+	10.0	S	20.0
•	12.0	A	22.0

GIMBAL PATTERN 8

O/F = 5.0

Pc = 632 PSIA

INTERSTAGE OFF



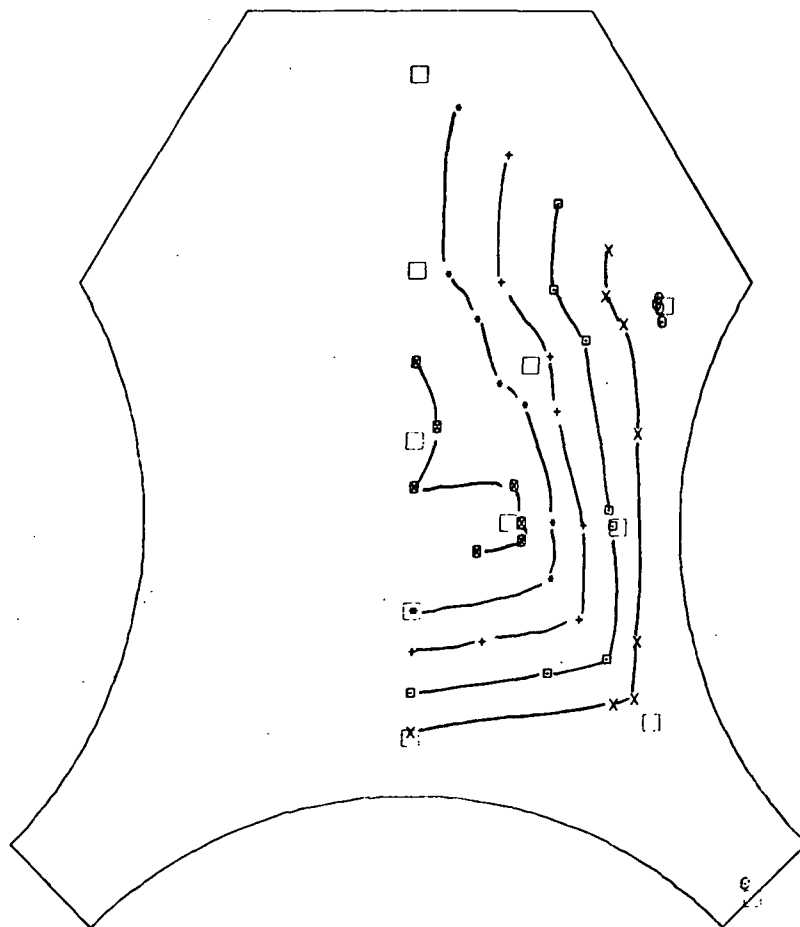
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	3.0	◻	5.5
x	3.5	●	6.0
◻	4.0	◻	6.5
+	4.5	S	7.0
•	5.0	A	7.5

GIMBAL PATTERN 9

O/F = 5.0

Pc = 632 PSIA

INTERSTAGE OFF



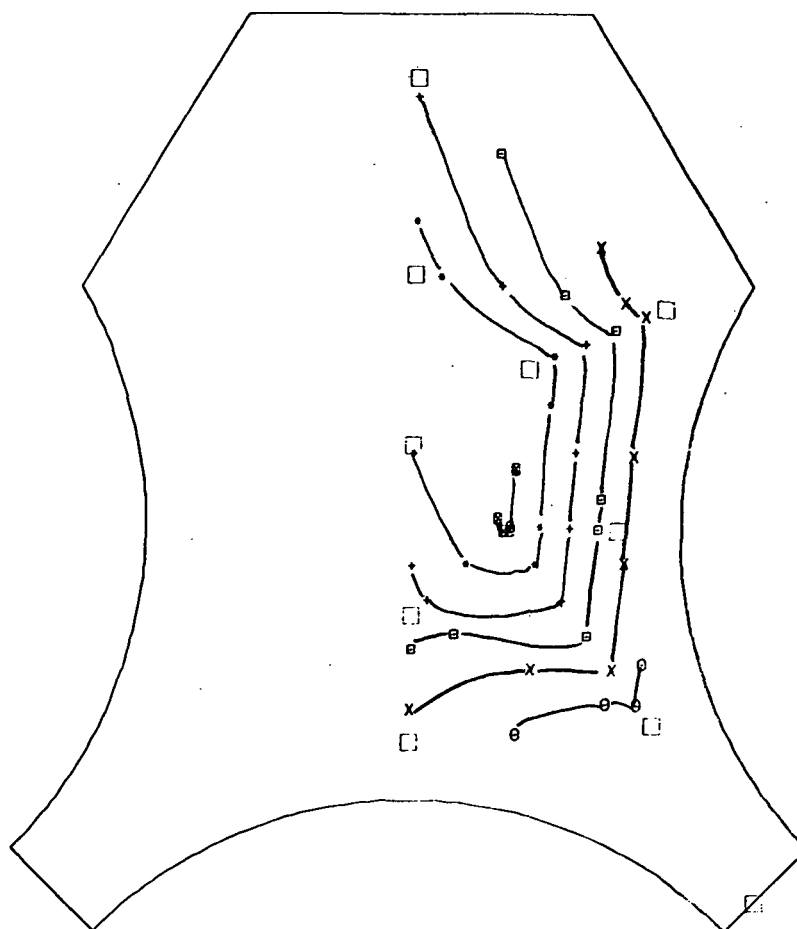
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
θ	3.0	■	8.0
x	4.0		
□	5.0		
+	6.0		
•	7.0		

GIMBAL PATTERN 9A

O/F = 5.0

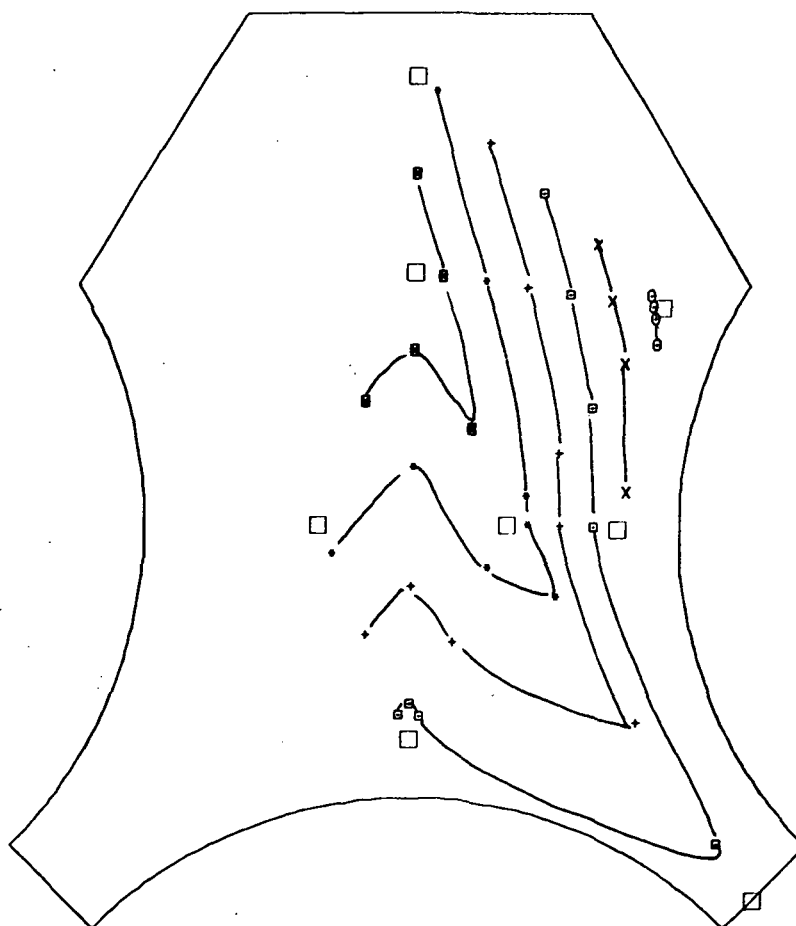
Pc = 632 PSIA

INTERSTAGE OFF



PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
θ	3.0	■	8.0
x	4.0		
□	5.0		
+	6.0		
•	7.0		

GIMBAL PATTERN 9B
 O/F = 5.5
 Pc = 715 PSIA
 INTERSTAGE ON



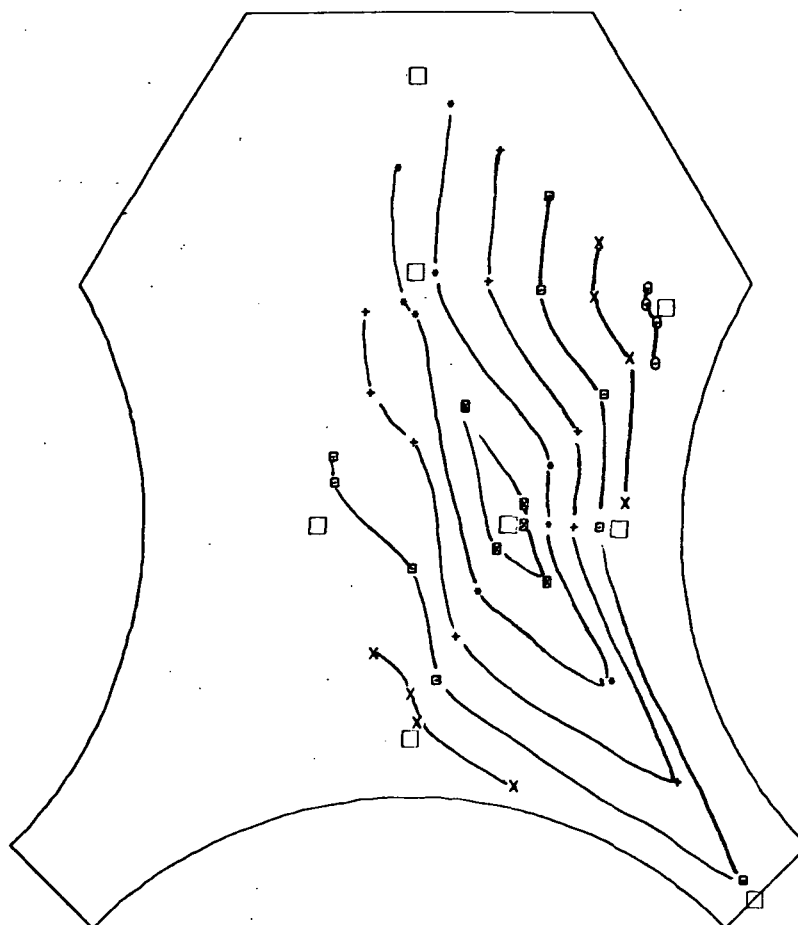
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	3.0	■	8.0
×	4.0		
◻	5.0		
+	6.0		
•	7.0		

GIMBAL PATTERN 9B

O/F = 5.5

Pc = 715 PSIA

INTERSTAGE OFF



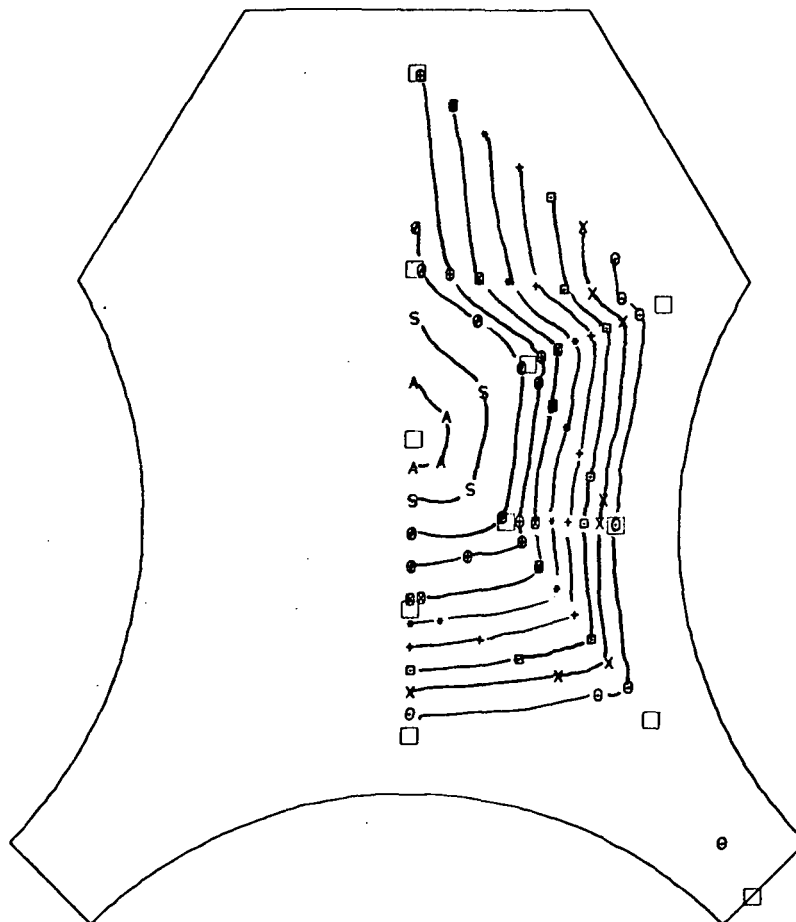
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	3.0	■	8.0
x	4.0		
□	5.0		
+	6.0		
•	7.0		

GIMBAL PATTERN 9B

O/F = 5.0

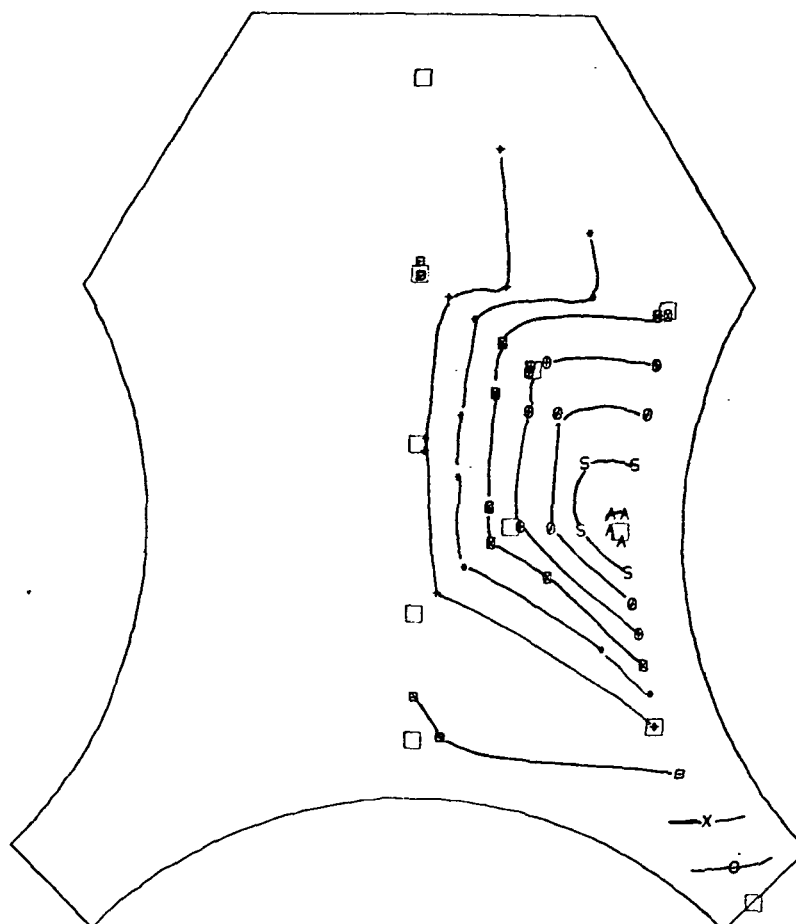
Pc = 632 PSIA

INTERSTAGE OFF



PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	4.0	●	6.5
×	4.5	●	7.0
□	5.0	●	7.5
+	5.5	S	8.0
•	6.0	A	8.5

GIMBAL PATTERN 2B
 O/F = 5.5
 Pc = 632 PSIA
 INTERSTAGE OFF



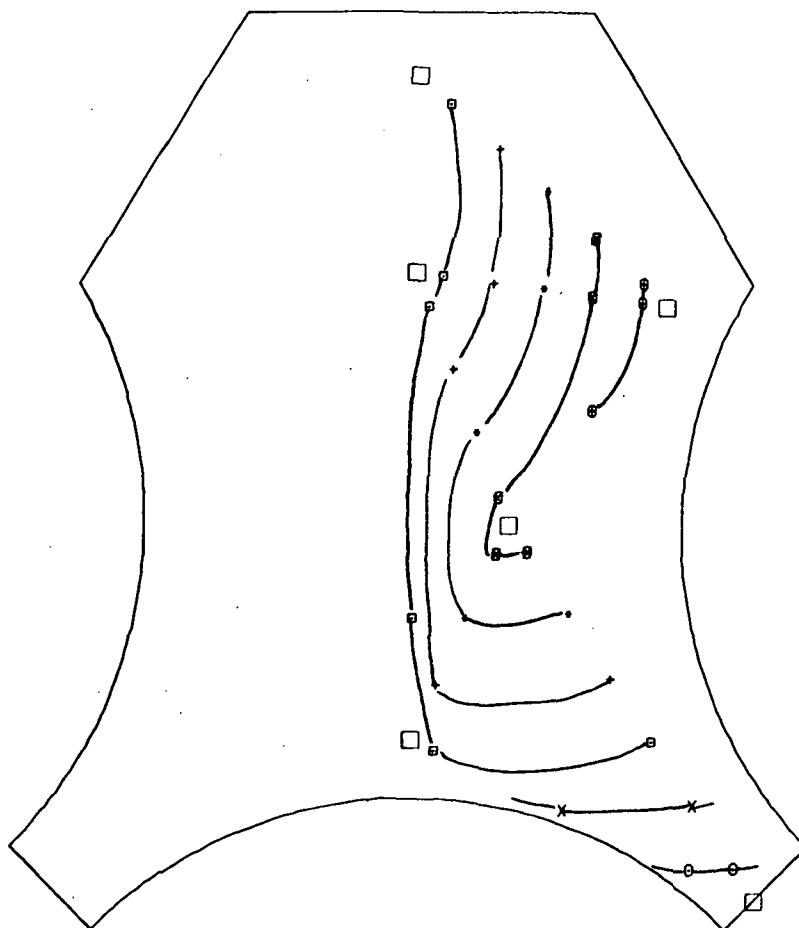
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	3.0	■	8.0
X	4.0	●	9.0
⊠	5.0	⊙	10.0
+	6.0	S	11.0
*	7.0	A	12.0

GIMBAL PATTERN 2B- MOD

O/F = 5.5

Pc = 715 PSIA

INTERSTAGE OFF



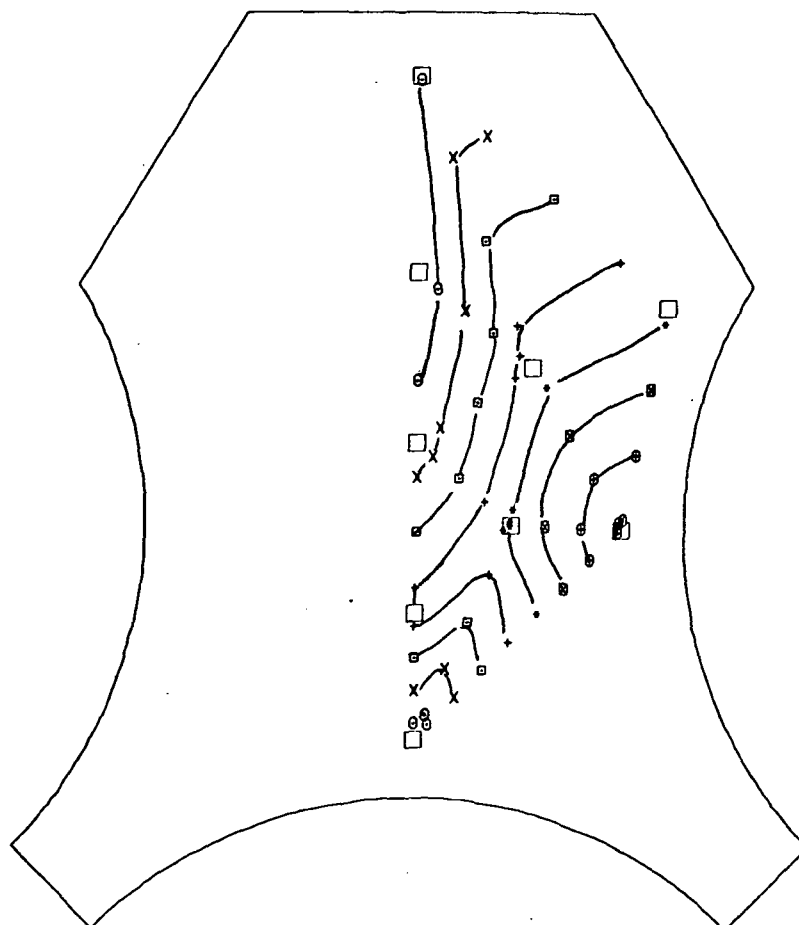
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	3.0	■	8.0
x	4.0	●	9.0
■	5.0		
+	6.0		
•	7.0		

GIMBAL PATTERN 2B

O/F = 5.5

Pc=632 PSIA

INTERSTAGE ON



PLOTTING SYMBOL KEY

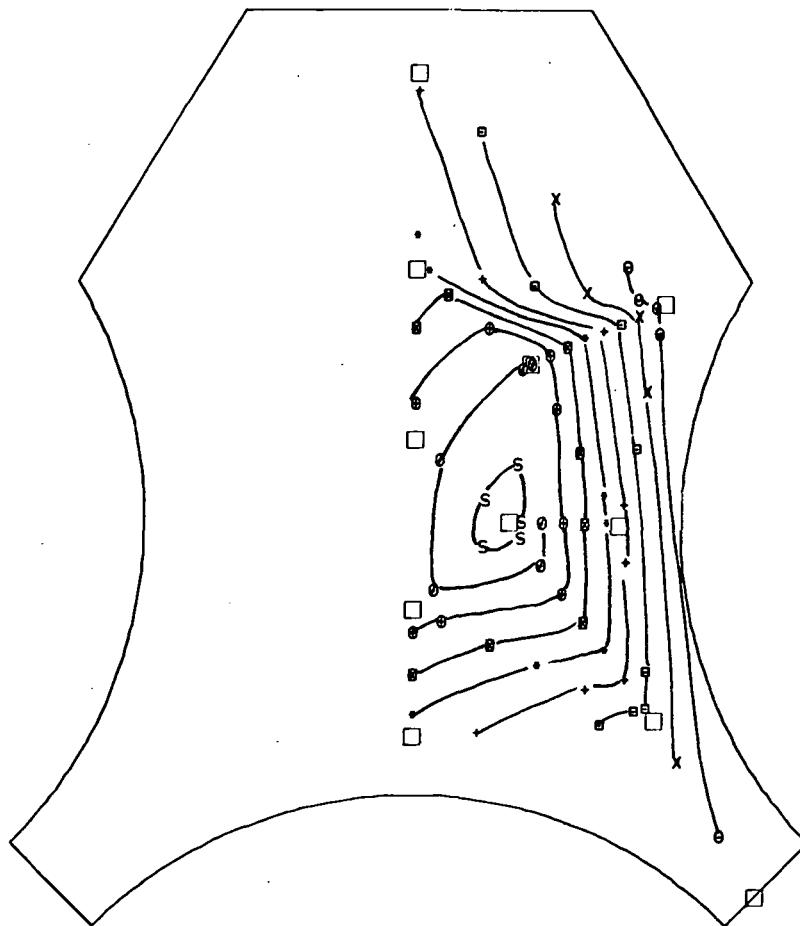
SYMBOL	QDOT	SYMBOL	QDOT
□	5.0	●	10.0
X	6.0	⊙	11.0
⊙	7.0	⊙	12.0
+	8.0		
•	9.0		

GIMBAL PATTERN 6A

O/F = 5.5

Pc = 715 PSIA

INTERSTAGE OFF



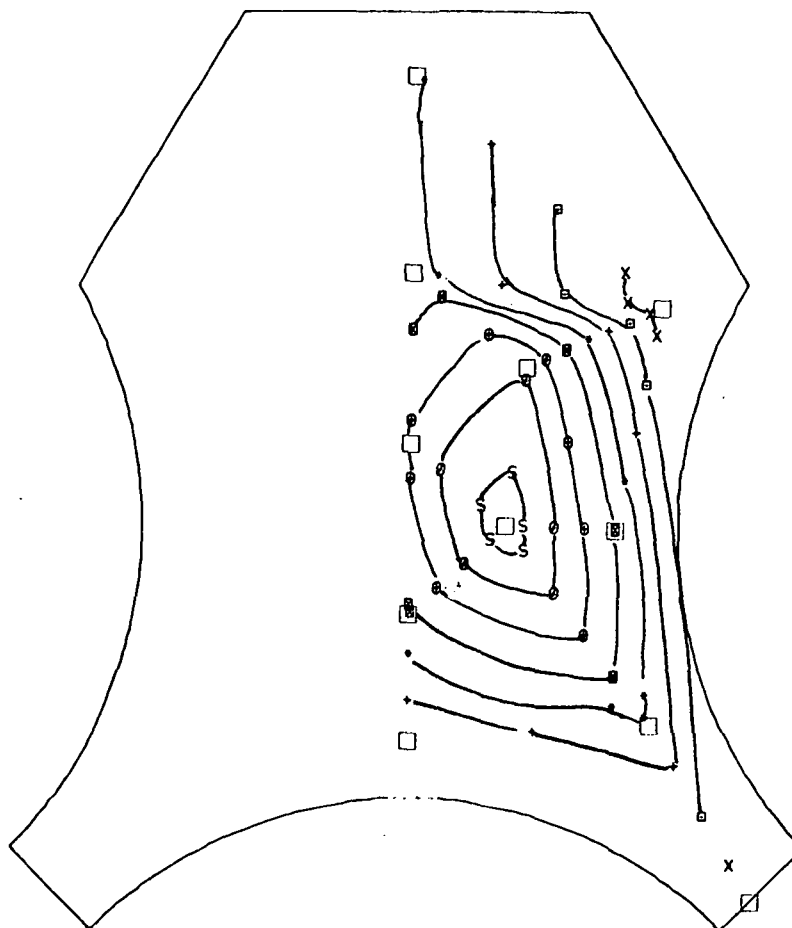
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
□	4.0	■	9.0
x	5.0	●	10.0
■	6.0	⊙	11.0
+	7.0	S	12.0
•	8.0		

GIMBAL PATTERN 6A

O/F = 5.5

Pc = 715 PSIA

INTERSTAGE ON



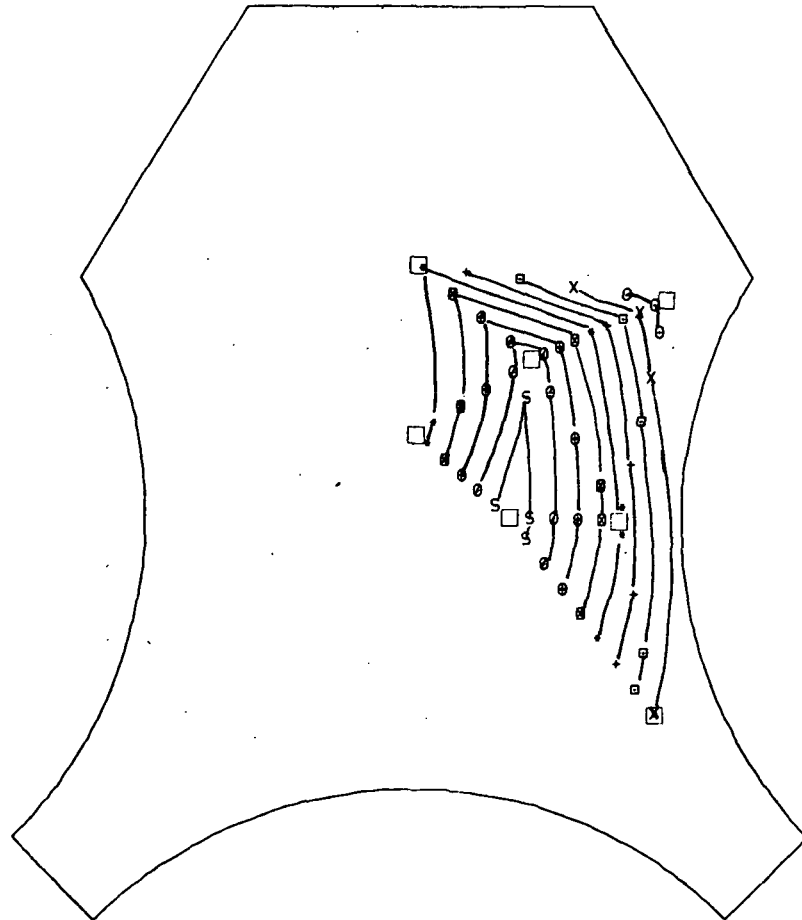
PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
⊖	4.0	⊖	9.0
x	5.0	●	10.0
⊖	6.0	⊖	11.0
+	7.0	S	12.0
•	8.0		

GIMBAL PATTERN 6A

O/F = 5.5

Pc = 715 PSIA

INTERSTAGE OFF



PLOTING SYMBOL KEY			
SYMBOL	QDOT	SYMBOL	QDOT
○	5.0	●	10.0
x	6.0	●	11.0
■	7.0	●	12.0
+	8.0	S	13.0
•	9.0		

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